

## Introduction

**Through** the past twenty years, the "pit," or "front ensemble," has grown to be an integral part of the modern drum corps and marching band activities. It is now crucial to the success of the *entire* musical ensemble that the pit plays an important role in the show production. Without a strong pit contribution, the effect of a modern-day marching band or drum corps is essentially lost. Where else can you find such potential for color, experimentation, and new scoring ideas?

There are several reasons for the development of this "ensemble within an ensemble." For starters, instrument and mallet manufacturers have stepped up their pace to meet the demands of the modern outdoor percussion ensemble. This coupled with better instruction, creative writing, and an ever-increasing growth in younger performers' technical and musical abilities has brought this art form to new heights. In short, this evolution has brought us into a new realm of percussion education and performance, merging outdoor playing styles with indoor playing styles. The pit ensemble has become a legitimate option for percussionists to play concert instruments, with "real world" applications, outdoors on the competitive marching field.

In order for a pit to achieve success, the members must possess various qualities. These qualities include a good understanding of musicianship, proper technique, sound production, ensemble playing, mallet selection, and instrument care. This book will thoroughly cover all of these subjects and more. It is our hope that both student and teacher will take this information and strive to continue the evolution of this relatively young art form.



## About this book

This book is meant to be a comprehensive guide for the pit member, as well as the pit educator. It is not intended to be directed toward any particular experience level. It is an all-encompassing resource for anyone who works with or plays in a front ensemble.

Both instructor and student must realize that there is a great deal of responsibility that goes into being an effective member of the pit. These responsibilities include:

- Developing a solid foundation of musicianship through technique.
- Developing an awareness of sound qualities and colors and learning how to produce them.
- Developing technical ability and fluidity (i.e. chops).
- Learning the different performance techniques necessary for the variety of instruments in the ensemble.
- Understanding proper instrument care and maintenance.
- BEING AN ENSEMBLE PLAYER, not just a good individual player (both on and OFF the field).

With each section of the marching percussion becoming more specialized, this multitude of responsibilities is in many ways unique to the pit section. This can create a challenging environment filled with musical, technical, and logistical questions.

### Up Front will be divided into five sections.

**Section 1** will discuss the different instruments and equipment commonly used in the pit, along with tips for care, maintenance, tuning, setup, mallet selection, and proper transportation. Also included in this chapter will be advice for technique on various accessory instruments.

**Section 2** will cover technique for keyboard percussion instruments and timpani. Discussion of proper technique will result in consistency of sound quality and tonal color, enhanced control of musical expression, and will offer the player an opportunity to apply these outdoor techniques to any "real world" indoor application (i.e. orchestral playing, solo playing, etc.).

**Section 3** is a collection of exercises currently used by the Santa Clara Vanguard. This complete package of pit warm ups will help develop the techniques discussed in Section 2.

**Section 4** will focus on concepts and techniques that are useful in rehearsing the front ensemble.

**Section 5** will be a study of different arranging and scoring concepts for the pit arranger. Excerpts from award-winning percussion scores of both authors will be used to illustrate these various arranging topics.



## Mallet Keyboard Instruments and Timpani

*Note: technique and exercises will be discussed in chapters 2 and 3*

The **main voices** of the pit consist of the following instruments: marimba, vibraphone, xylophone, glockenspiel, crotales, chimes, and of course – timpani. Depending on the size or budget of your pit, the ensemble may consist of several of these instruments or just a few, in any multitude of combinations. Since the marimba, xylophone, glockenspiel, and vibraphone typically perform the primary role in the overall scoring of the pit, they are essential to the instrumentation and oftentimes it is beneficial to have *more than one* of each of these instruments. This is particularly true with the marimba and vibraphone, especially when you consider the fact that they tend to project less than other percussion instruments when played outdoors.

The **frames** of these instruments can be easily damaged when subjected to the inevitable “outdoor” challenges: rolling over gravel, speed bumps, sand, thick grass, and mud. With this in mind, it’s worthwhile to consider the added investment of “outdoor frames.” In fact, for many programs, this is a necessity. There are several manufacturers of high-quality outdoor frames. This investment will not only help your expensive instruments last much longer, but it will be an expense that you will most likely only have to endure once. There is no substitute for proper instrument care and respect, however outdoor keyboard frames can end up saving you a small fortune in instrument repair and replacements, and more importantly, it will save you many headaches.

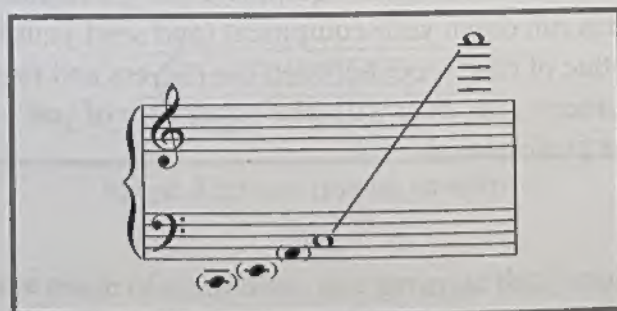




## MARIMBA



*The marimba is one of the most important instruments in today's pit ensemble. Its warm tone, depth, and color are essential to the overall sound of the group.*



*Standard range 4 to 5 octaves: (sounds as written)*

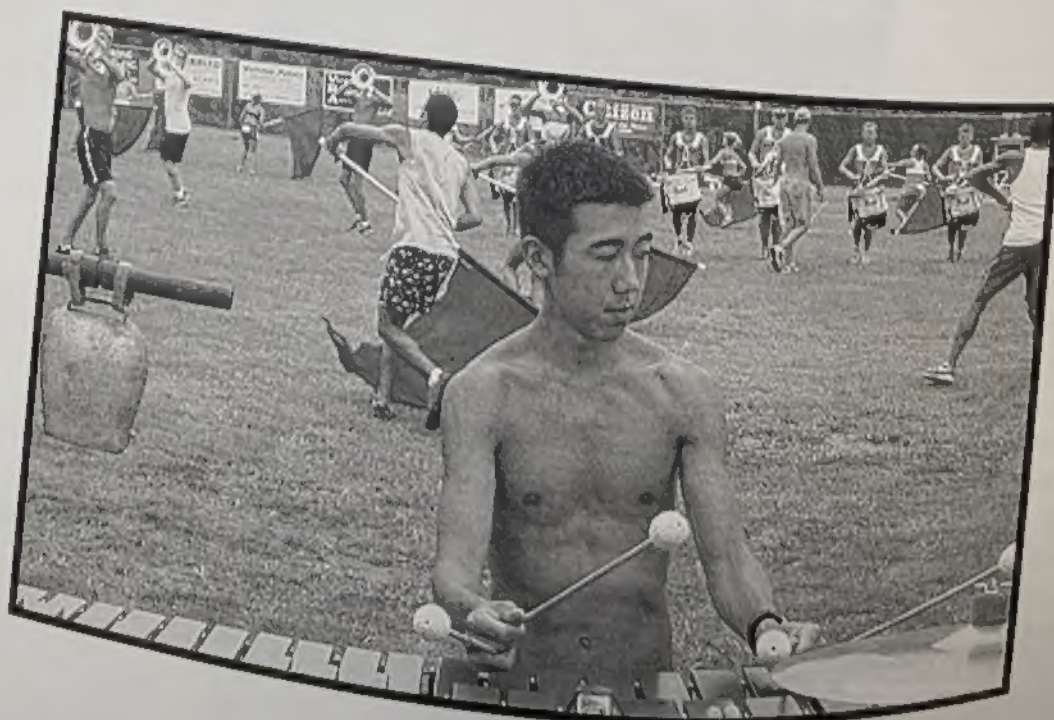
The best sounding marimba **bars** are made of **rosewood**. Though rosewood is a fairly durable material, it can be quite fragile when you consider how thin a marimba bar can be, especially in the lower register. Still, rosewood marimbas have an unsurpassed resonance and tone quality, and are the standard to which synthetic barred instruments are compared. Unfortunately, there is a downside. When exposed to sunlight, rosewood instruments tend to "dry out" and sound a little "dead." Rosewood bars can also go out of tune, temporarily, when subjected to extreme heat. Also, rain and humidity are "evil" realities that will take no pity on your poor rosewood bars. With proper care, using rosewood marimbas outdoors can be a wonderful thing. However, you need to have a plan on how to cope with the elements that Mother Nature will inevitably throw your way. (see page 90)



**Padouk** is another type of wood that is used for marimbas. Typically, padouk is much lighter and more porous than rosewood, and tends to sound "drier." Since it is a softer wood, it will also go out of tune more easily, especially after a few rigorous outdoor seasons. The same issues of weather that apply to rosewood will also apply to padouk. Marimbas with padouk bars are marketed for the budget-minded consumer. Though one may pay less to purchase one of these instruments, the bars will not last as long as those on a rosewood or synthetic instrument, and they will never have as pure or "full" of a tone. As they say, **you get what you pay for.**

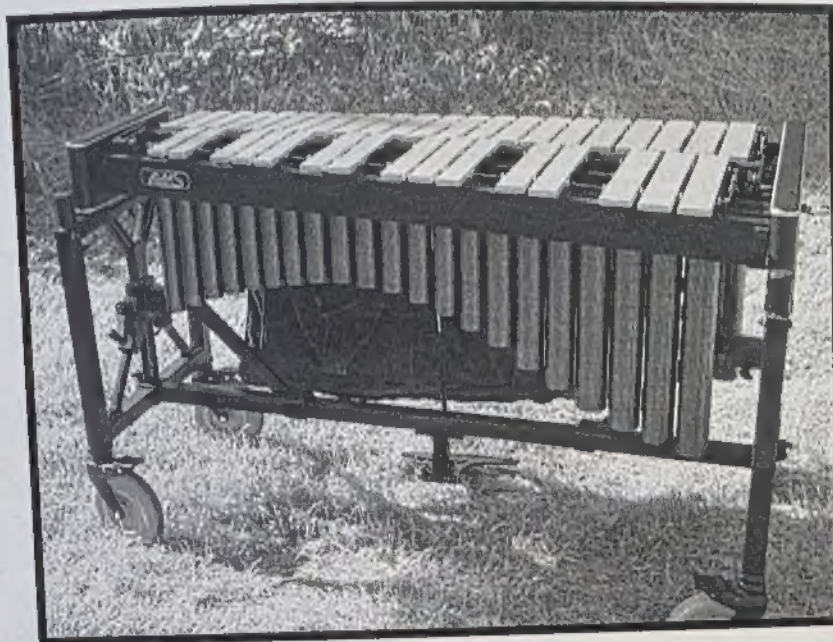
Great advancements have been made in the production of **synthetic** bars to the point where these instruments can provide a good alternative to rosewood. They typically have a more brittle, "glassy" sound. However, many instructors will make this sacrifice in the interest of increased durability, less trouble with weather damage, and a sound that tends to be a little louder outdoors. Synthetic instruments also tend to be less expensive than rosewood, making it a logical choice for many drum corps and school programs.

Lastly, your marimba should be treated as one of your best friends. Always **take great care** when moving, loading, or performing on the marimba as you would with any other musical instrument. Sometimes when a student or the loading crew is in a rush or not thinking about the task at hand, equipment can get mishandled or treated poorly. Not only does this run down your equipment (and send your budget through the roof), it instills an ethic of disrespect between the players and their instruments. Take care of your instruments, and they will take better care of you – by sounding better, and looking more professional.

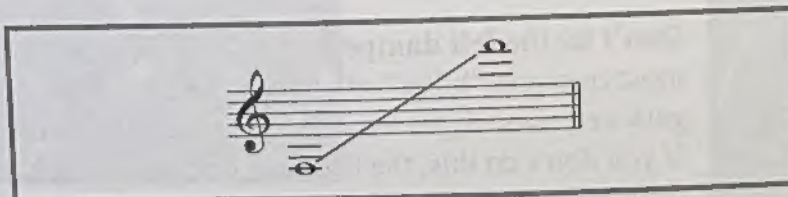




## VIBRAPHONE (a.k.a. vibes)



*The vibraphone is one of the most essential instruments in the pit due to its mellow, metallic sound and its ability to sustain.*



*Range: 3 octaves (sounds as written)*

Vibraphone bars are made of aluminum, and generate their unique sound from a sustain pedal (*similar* to a piano), and a motor which controls fans at the top of each resonator tube. These fans allow the instrument to have a vibrato sound - hence the name, "vibraphone." These instruments were also called "vibraharp" when first invented.

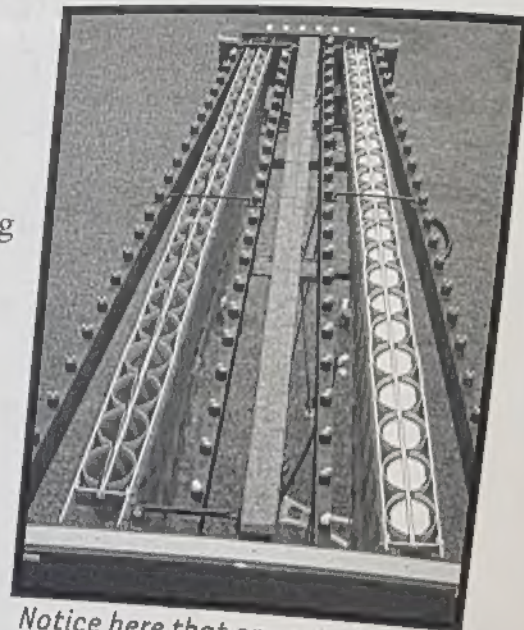
**Vibraphone bars** are either graduated in width (wider toward the lower range, getting narrower toward the top range), or non-graduated, in which all the bars are the same width. Instruments with graduated bars offer a superior sound quality over those with non-graduated bars. Simply put, bigger bars "move more air," giving you a bigger, fuller sound quality. Though graduated bars may cost you a few hundred dollars extra, it is a necessary investment, particularly when playing outdoors.

Being one of the most crucial elements in the overall sound of your pit, it is usually best to use at least two vibraphones. This will help you to achieve a **full ensemble sound**. Naturally, this may be limited by size or budget constraints, but having two or more vibraphones in your pit will drastically increase the sound quality of the pit, and ultimately your band.

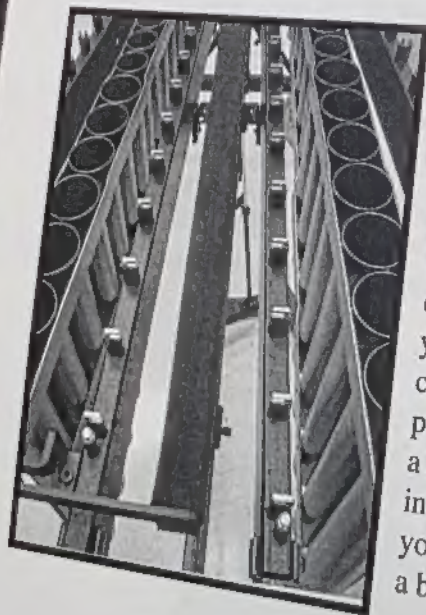


## Helpful hints for vibes

If you are not using the motor outdoors, **be sure that the resonator fans are in the "open" position** prior to playing on the vibraphone. If they are closed, the mouth of the resonator will be sealed off, giving the instrument a very thin sound that lacks volume and richness. Always check this prior to rehearsing and performing!

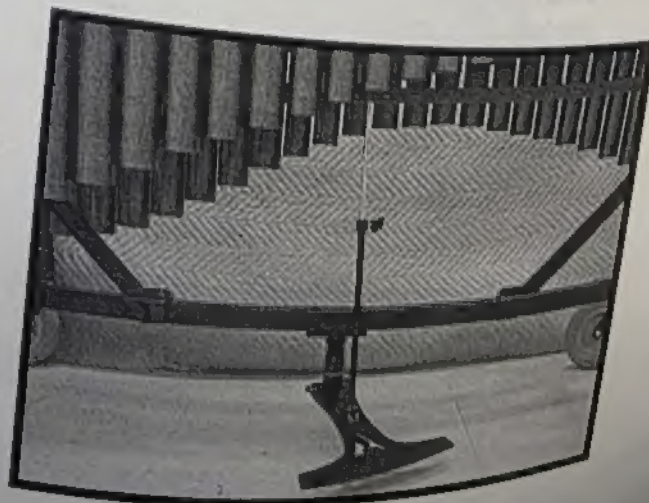


Notice here that one set of resonator fans are open (left), while the other set of resonator fans are closed (right)

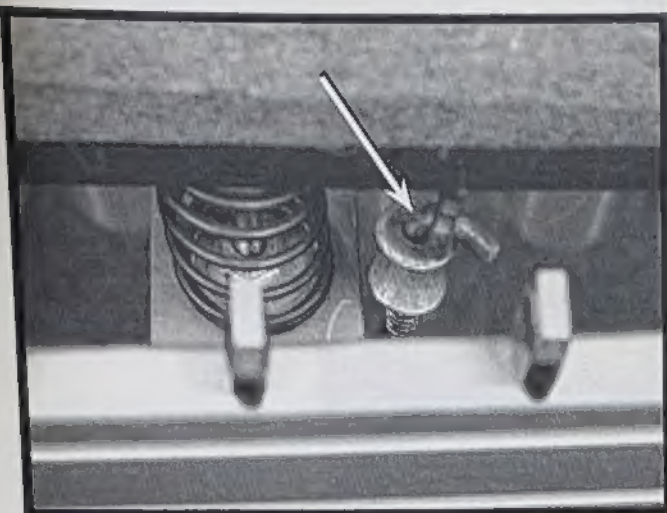


**Don't let the felt dampening bar get wet!** Moisture is the most common "killer" of vibraphone felts. If the instrument gets wet, remove the bars and use a hair dryer to dry the felt. If you don't do this, the bars will compact the felt and the dampening bar will no longer dampen the sound. Even worse, your instrument may get moldy. Yuck! If your felt has become compacted, or is falling apart, the good news is that you can purchase replacement felts. The bad news is that they can be a little expensive, and are difficult to secure to the instrument in an even fashion. When replacing the felt, be patient and do your best. The care and maintenance of this dampening bar is a big part of the instrument's overall sound quality.

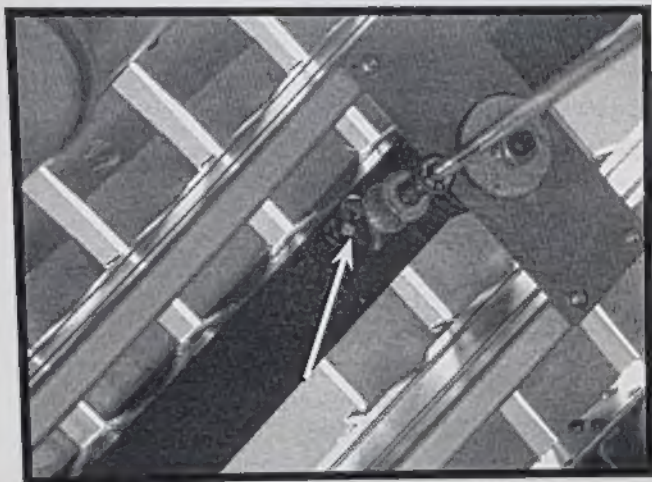
**Be sure the pedal mechanism doesn't squeak!** Nothing is more disconcerting than listening to a squeaky vibe pedal. A couple squirts of WD-40 will take care of this.







**Check the vertical connector.** This mechanism connects the pedal to the dampening bar. Some manufacturers have a strange way of connecting these parts together, mainly for the purpose of disassembling the instrument. Unfortunately, it may not be very secure and it can become disconnected during performance or while transporting, rendering the pedal useless. Take some time to “check under the hood” and see how the instrument is assembled beneath the dampening bar. Continue to check this mechanism before and after the instrument is moved and always before a performance or rehearsal. Sometimes reinforcing that connection with a metal or plastic fastener is all that is needed.

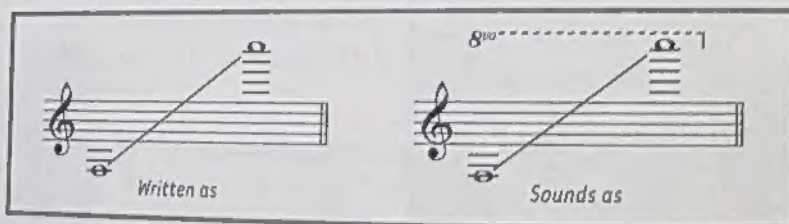




## XYLOPHONE



*The xylophone is probably the most common instrument in pits across the country. In fact, most schools own a xylophone before they own a marimba or vibraphone.*



*Standard range 3½ octaves: (sounds one octave higher than written)*

Some of the most famous music written for **xylophone** can be heard in the ragtime music of George Hamilton Green and Harry Breuer, Porgy and Bess by George Gershwin, and Colas Breugnon by Kabalevsky to name only a few. Xylophone is used in much of the standard orchestral and concert band repertoire and is frequently employed in the marching activity, making it one of the most popular and versatile instruments of the keyboard percussion family.

Due to a different tuning process than the marimba, xylophones have a much "brighter" and more "staccato" sound. Like the marimba, xylophones have wood (rosewood) or synthetic **bars**. Since xylophones are most often played with uncovered **mallets** (plastic or rubber), synthetic bars are recommended for outdoor use because they can withstand the punishment that these mallets often deliver. Also, this instrument sounds an octave higher than written, and is considered a "transposing" instrument. This is an important consideration when arranging.

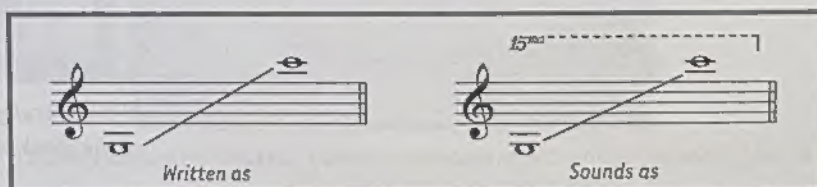
As a result of the tuning process, the mallet selection, and the octave transposition the xylophone is one of the easiest instruments to hear outdoors. Simply put, this instrument has extreme "**cutting**" power. Use this power wisely. You must take into account "blend" and "balance" with the overall marching band or drum corps. It's very easy for the "crisp" sound of the xylophone to dominate over the other instruments. Many of these balance and blend issues can be handled by smart scoring and good mallet selection.



## GLOCKENSPIEL (a.k.a. orchestra bells)



*Like the xylophone, the glockenspiel is an instrument that is used widely in orchestra & band settings. Also like the xylophone, a good quality glockenspiel is a must for any pit.*



Standard range 2½ octaves: (sounds two octaves higher than written)

The best glockenspiels are made with **steel bars**. Though you've probably seen old bell lyres that have aluminum bars. These aluminum barred bell lyres aren't exactly the highest quality instruments. They don't sustain for very long, and they tend to get beaten out of tune very easily since the aluminum is so soft. A good quality steel barred instrument will last for many years and provide a long sustained, pure tone.

The worst enemy of the glockenspiel is **rust**. Most glockenspiels come with bars that are plated with chrome or nickel. If moisture finds its way into any flaws in the plating, it doesn't take long to start to develop rust spots. Rust most easily develops around the "node" hole where the bars are mounted to the frame. Rust will not only tarnish your instrument's good looks, but it will decrease its brilliance in sound. Keep the bars polished and dry. A good metal polish like Simi-chrome or Brasso should do the trick. If your pit is caught in the rain, make sure the glockenspiel and other metallic instruments are the first ones put under the tarp or carried to safety. When the instruments are brought inside they should be dried thoroughly. This will take some time for pit members to accomplish, but that's part of the gig!

Glockenspiels are generally played in their **case**. The case contains rails which are usually lined with felt strips or rubber pads on which the bars rest. Whatever type of glockenspiel you are using, it is important that the case be taken care of as it *directly affects* the sound of the instrument. Be sure there is as little "surface contact" between the case and the bar as possible.



## Helpful hints for timpani

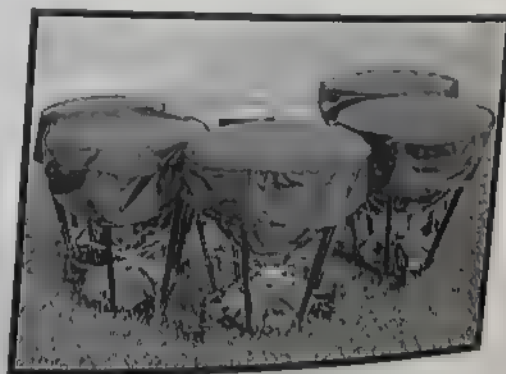
Don't get too crazy with adjusting the **pedal spring tension knob** on the base of the drum. Some people make the mistake of using this knob excessively, rather than adjusting the tension on the head. This usually results in a pedal spring tension that is out of balance with the head tension. Symptoms of this are the dreaded "creeping pedal." If the pedal is put in its lowest position (heel to the floor) and it creeps back up, the head tension is too loose. Of course, the opposite is true. If you put the pedal in its highest position (toe all the way up) and it creeps back down, the head tension is too tight.



**Store the drums** with the pedal just under its tightest setting. This helps to keep the heads "seated." This is quite important since the majority of timpani models come with extended collars that may shift at looser tensions. Timpani heads can be fussy, and if the "seat" becomes displaced, it's nearly impossible to get them sounding good again.



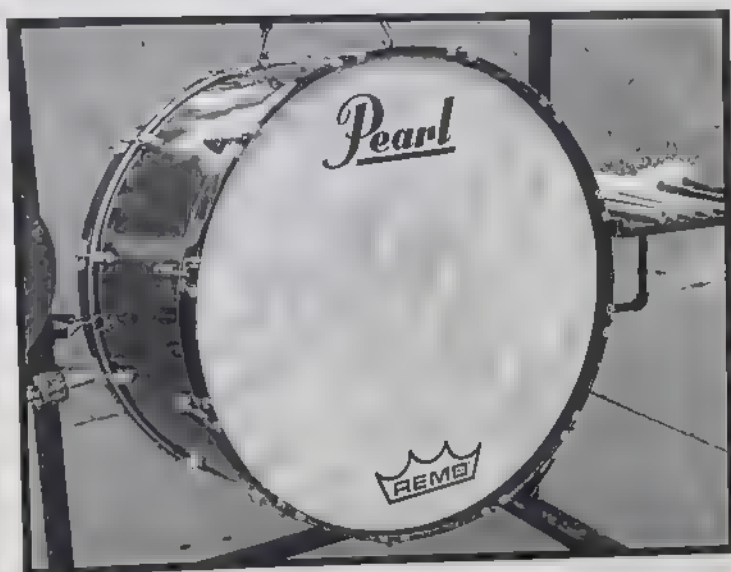
Keep the drums **covered** when not in use, and by all means, be sure that objects are not placed on top of them! Any unnecessary pressure on the heads or rims can cause the instrument to go out of tune.





## Drums, Cymbals, and Gongs

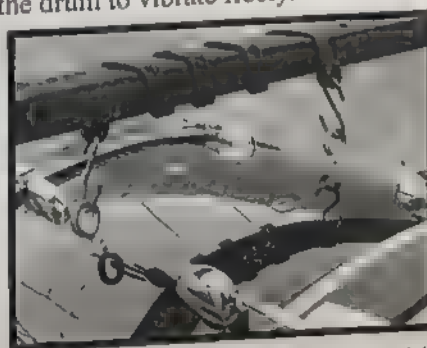
Now that we've discussed keyboards and timpani, it is time to move on to the non-pitched "essentials" of the pit: drums, cymbals, and gongs. These instruments can enhance melodic passages, supply accompaniment, provide an infinite amount of color and rhythmic drive, and most of all, serve up powerful impacts.



### CONCERT BASS DRUM

The concert bass drum is an absolutely essential piece of equipment for a pit. Not only will it deliver powerful impacts, but with some creativity, it can provide your pit with a wide array of color. For example, experiment with brush effects, try different keyboard mallets for "brittle" sounds, invest in a nice pair of rolling mallets to achieve thunderous rolls or quiet rumbles. Some groups have experimented, with great success, using 3 or 4 bass drums in the pit. This can produce overwhelming sounds!

Concert bass drums come in several different **sizes**. A good general size is 36" in diameter. There are several types of **stands** on the market as well. Make sure whatever stand you choose has large casters and allows the drum to vibrate freely. "Suspended" style stands often work the best. Replacement bands and bungees can be found in most hardware stores.



Here the drum is suspended in a hoop with large rubber bands or bungee cords.



## CONCERT SNARE DRUM

A standard concert snare drum is 5" to 6½" deep with a 14" diameter. A piccolo snare is 3½" deep with a 12" or 13" diameter. These drums have an aluminum, wood, steel, brass, or copper **shell**. All of these size configurations and shell materials work well outside. It simply depends on your taste.

A single-ply, coated drum **head** will do the job. If the top head is too thick, the tone of the drum will be muffled. Remember, tone equals projection. A well tuned concert snare drum should have a bit of "ring." Remember to use **sticks** that are designed for concert snare drums; do not use marching snare sticks as they are far too heavy and will distort the sound of the drum. A good starting point for concert snare sticks is a 2B with a wood tip.

**Tuning** is another matter of taste, but the batter head should be tight enough so the parts will "speak." The snare side head should be tuned slightly lower than the batter head, however, you don't want the snare side head so loose that you get a muddy, inarticulate sound.



*In most cases, playing about a third of the way from the rim will provide the best mix of overtones and articulation.*

Concert snare drums may also have several different types of **snare**s. Wire snares are the most common, but tend not to handle high volumes well. Cable snares (thicker wire or plastic coated wire) are very versatile and handle all volume levels. Gut can provide bold, dark sounds but may not handle lower dynamic levels as well as the other types of snares. Several manufactures make concert snare drums with multiple strainers so you can have two or three different types of snares on one drum. This provides the best characteristics of all types of snares!



It is very important to use a **concert height snare drum stand**. Drum set stands won't do the job, they are too short! When performing on a concert snare drum, the drum should be waist height.

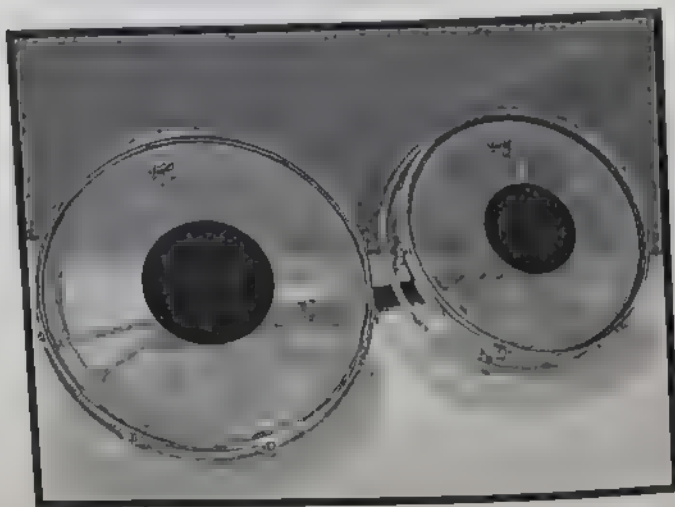




## IMPACT DRUMS

As the name implies, the primary intent of these drums is to supply powerful impacts. This is somewhat of a necessity in the marching activity. Basically, an impact drum can be created by using a **large tom or bass drum** (like the 22" bass drum of a drum set). For maximum "punch," it should be a **single-headed** drum with a deep sound, so make sure the head is tuned on the loose side. Since these drums will be played at high volumes, **2-ply heads** will

sound the best. These toms are effectively played with hard felt marching bass drum **mallets** as these mallets have a large head made of a dense material. Impact drums are also good to use for passages that require articulate rhythms that might not speak as well on a concert bass drum. For maximum impact and punch, angle the heads in the direction of the audience.



## ROTO TOMS

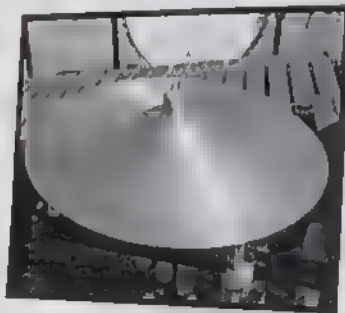
Though not as popular today, roto toms are unique in that they can be quickly tuned to different pitches by rotating the heads in a circular motion. They serve many of the same melodic and tonal roles as concert toms, but now you can actually tune to **specific pitches**. **Single-ply heads** work best on these drums and either **snare sticks** or covered **mallets** can be used. Their only draw back is that they have no shells, so their sound does not carry well outdoors.

Still, it can be an interesting and unique color. For a cool sample of roto-toms in action, check out the famous drum solo from the 1982-83 *Bridgmen*, "Black Market Juggler," arranged by Dennis Delucia.



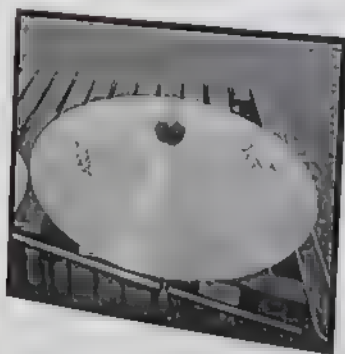
## Suspended Cymbals

Suspended cymbals are probably more abundant in the front ensemble than any other form of percussion ensemble. They come in any number of sizes and weights, and there are a multitude of models and sounds offered by different manufacturers. Choosing cymbals that are right for your group can be a bit overwhelming. The best way to choose cymbals for your ensemble is to sample and compare several different instruments. Since cymbals are expensive, most ensembles will be limited with how many of these instruments they'll be able to purchase, so it's good to have the basic sounds represented. Please note: the below descriptions are VERY general.



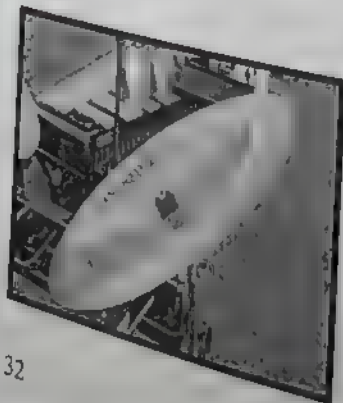
### SUSPENDED CYMBALS (18" to 20")

These are most frequently used to supply body, color, and for connecting phrases. These are large cymbals of medium-thin weight that offer the most warmth and range outdoors. Cymbals with more "hand hammering" are usually warmer and darker in sound. Cymbals that are designated as "suspended" cymbals by the manufacturers are not the only cymbals that can serve this function. Many, medium-thin and thin weight crash cymbals will do very nicely. Let your ears be your guide, not the label on the cymbal.



### SMALLER ACCENT OR CRASH CYMBALS (14" to 18")

These can also be used as suspended cymbals, but are often more effective for "crash" sounds. They typically deliver a quick attack, with a quick decay. Smaller cymbals will generally have a higher pitch, and may not have as "warm" a sound outdoors as the larger cymbals, however, weight factors into this as well. The thicker the cymbal, the brighter its sound. Thinner cymbals usually sound "warmer" but may also distort at higher volumes.



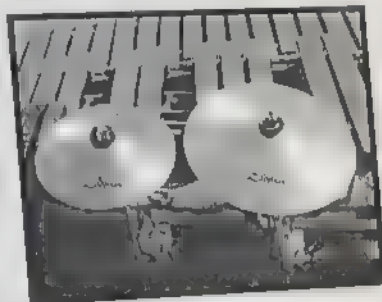
### CHINA CYMBALS (12" - 22")

These come in almost any shape and size you can imagine. They have a flanged edge and squared off bell, which gives them a "trashy," gong-like sound. The majority of China cymbals have a quick decay, and sound best when you need to add some trashy accent color. China cymbals with a longer decay can be used as suspended cymbals. This is ideal when you're looking for a small tam tam type sound.



### SPLASH CYMBALS (6" - 12")

These cute little guys are the smallest in the crash cymbal family. They have a high pitch with a quick decay and are great for adding subtle colors. Performers must be careful with these little cymbals though. They are fragile and won't have the cutting power of a 17" crash. Save them for exposed passages where they have a chance to be heard.



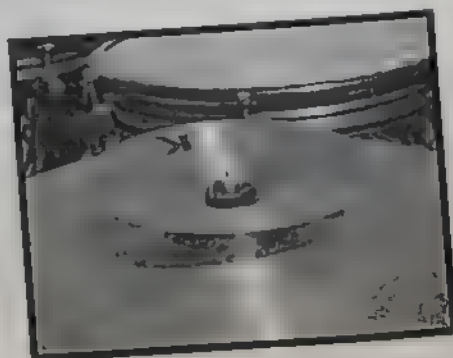
### SIZZLE CYMBALS (18" - 20")

Sizzle cymbals get their name from the loose rivets that are drilled into the cymbal. When the cymbal is struck, these rivets buzz along with the vibrations. The best sizzle cymbals are ones that are fairly thin, and large. Sizzle cymbals can be struck with sticks, mallets, or even a finger. To create very long sustains, roll very slowly with soft yarn mallets.



### RIDE CYMBALS (18" - 22")

These cymbals are not designed to be used as suspended cymbals. Most ride cymbals have very controlled overtones and are designed to produce clear, stick articulation and subtle, dry crashes. Ride cymbals can also deliver powerful bell sounds when played with the shoulder or butt end of a snare stick. The ride cymbal produces a bit more of a specific sound and may not be needed for all repertoire.



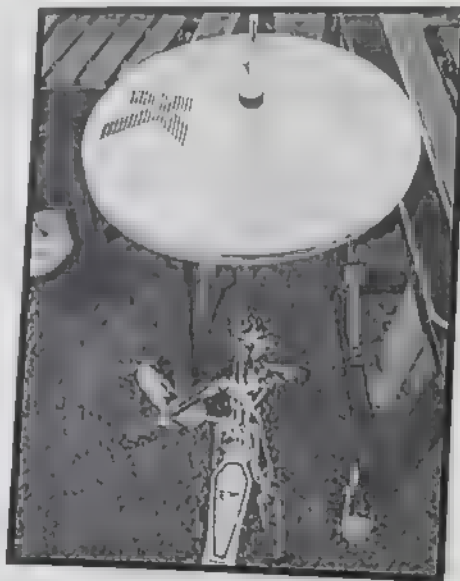
#### Space Saving Tip!

Splash cymbals can be effectively mounted on top of other suspended cymbals (shown here). Be sure to place a thin felt washer between the two cymbals to avoid metal-on-metal contact. Take care not to strike the splash cymbal too hard as it can crack more easily when struck from this angle.



### **HiHat Cymbals (13" to 15")**

These cymbals travel in pairs and should be played on a hihat stand (with a pedal). Together these cymbals can produce a wide variety of sounds and grooves, from washy and sizzling to articulate and staccato. Hihats are usually played with a stick or brush.



### **Zil-Bels or Ice Bells**

**(large or small sizes)**

These thick, non-pitched bells produce a piercing, metallic sound with a long sustain. Don't be fooled by their size, these bells can cut through any ensemble with ease. They can be played with sticks or any kind of bell or xylophone mallet.

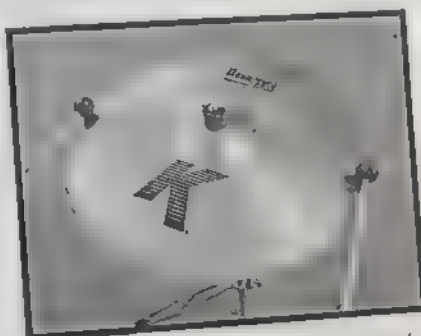




## A few suspended cymbal tips...

**Don't overplay** the instrument! Each cymbal has a "ceiling," or limit, as to how loud it is physically capable of playing. Beyond this ceiling, its tone turns to distortion. While it may seem like playing the instrument "harder, faster, or higher" will make it louder, actually the opposite is true. Since this distorted sound is less pure, it doesn't carry as well, and it's basically just "noisy." There may be a few moments where this could be an "effect," but for general playing, it should be avoided. This is the one rule that is broken most often by inexperienced players.

**Rolling:** There is usually no need to roll very fast, as the sustain of the cymbal should produce most of your sound. Roll just fast enough to keep an even sustain. At lower volumes, the roll will be slower. At higher volumes, the roll will be faster. As with timpani, bass drum, or keyboard instruments, the roll speed on suspended cymbals should be determined by the needs of the music.



Roll on the cymbal at the edge, with each hand directly across from each other.

**Avoid crashing on suspended cymbals with plastic xylophone or bell mallets.** This may sound obvious, but again, it's amazing how frequently inexperienced performers do this. Not only does it sound bad, but it's a quick way to crack your cymbals. If the performer doesn't have time to pick up a softer mallet or drumstick, have someone else play the part who has a more appropriate implement available. No cymbal part is so important that you have to clang through the ensemble with lexan mallets on a 17" cymbal.

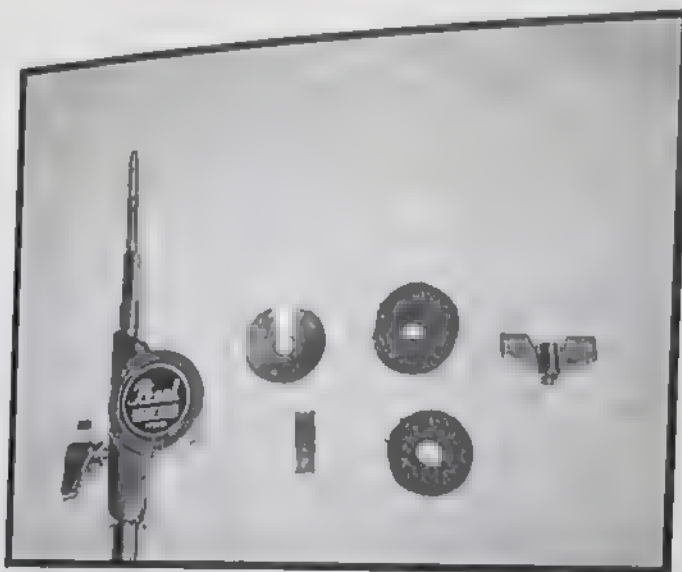


When **crashing** on a suspended cymbal with a stick, play the edge of the cymbal with the shoulder of the stick. This will give you the fullest sound from the cymbal.

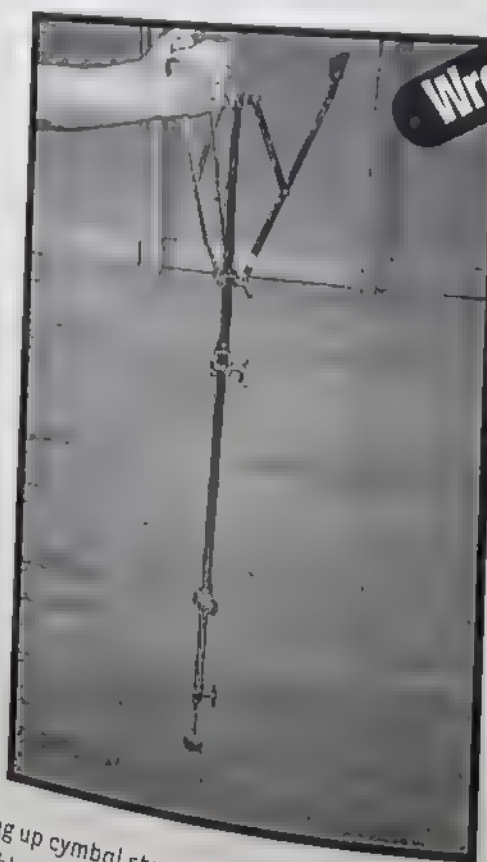


For a quicker, brighter sound, crash with the shoulder of the stick on the bow of the cymbal (left). With covered mallets, crash as close to the edge of the cymbal as you can (right). This will produce a clear attack sound and a full spectrum of overtones.





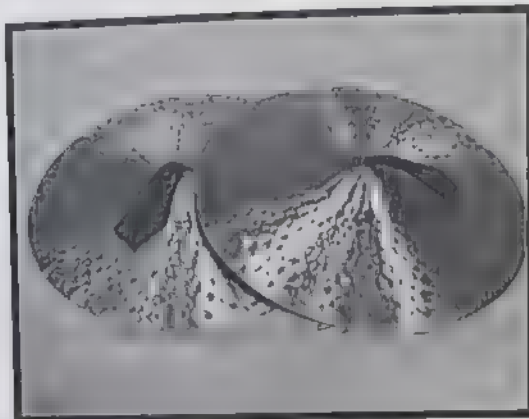
Make sure all **cymbal stands** have a nylon sleeve, 2 felt washers, a metal washer underneath, and a wing nut on top. If any of these pieces are missing, your expensive cymbals may be damaged.



When folding up cymbal stands, don't turn them upside down! This will inevitably cause parts to get lost (felts washers, etc), and you may damage the stem of the stand.



## HAND CYMBALS



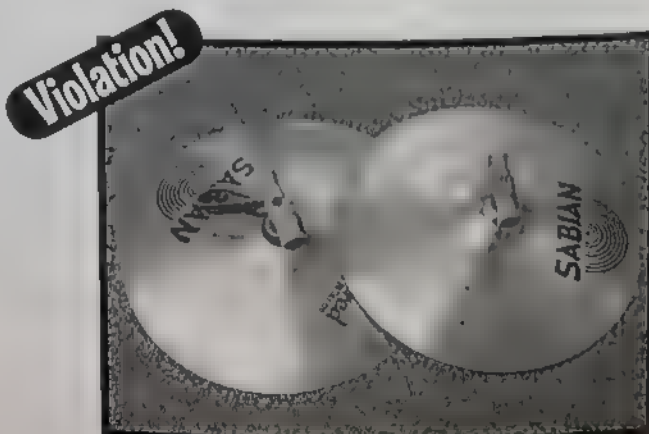
Hand cymbals are standard in any band, corps, or orchestra setting. Contrary to what some may think (particularly those who have never tried crashing a pair of cymbals), this is a tough instrument to play well. It takes a lot of practice to get a nice full-sounding crash. It's equally difficult to play soft notes with consistency. For these reasons, it is strongly recommended that pit instructors take part of a rehearsal block each year, and have a cymbal "clinic." If

you are dealing with students who have never been in a pit before, there's a good chance that they've never crashed a pair of cymbals. Be sure they understand the basics of hand cymbal technique (see pages 39-41).

A good "general" size for hand cymbals is 18". This is probably the most standard size used in concert settings as well. These are great for general purpose playing. If you have the means for another pair, 20" cymbals would be a good choice. They have more "body" outdoors, and tend to project better. These are great for powerful impacts. It is alright to use smaller sizes as well, such as 16" or 17", but they will have a brighter, smaller sound that won't sustain as well outdoors. Consider these to be effects, rather than general purpose crashes.

### Tying the knot

Your hand cymbals should be equipped with good quality **leather straps**. If you have wood handles on your cymbals, remove them and burn them. These handles will restrict the vibrations of the cymbals which could lead to cracking. **Leather pads** are not necessary in the pit. In fact, they should only be used by hand cymbal players marching on the field.



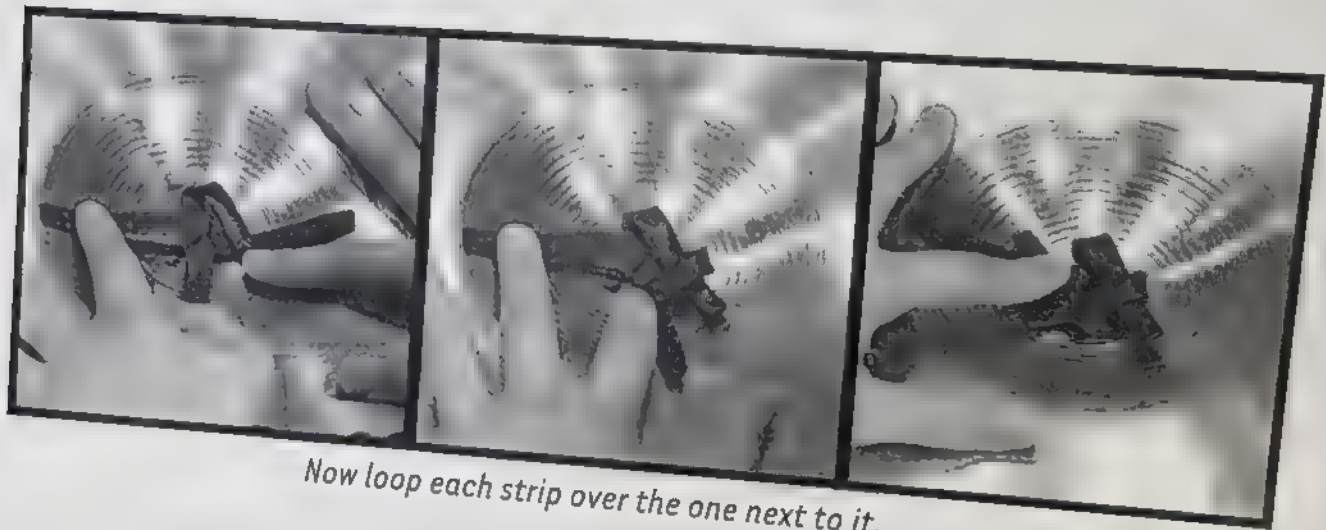
*These types of cymbal handles should only be used if you are one of those little wind-up monkey toys!*



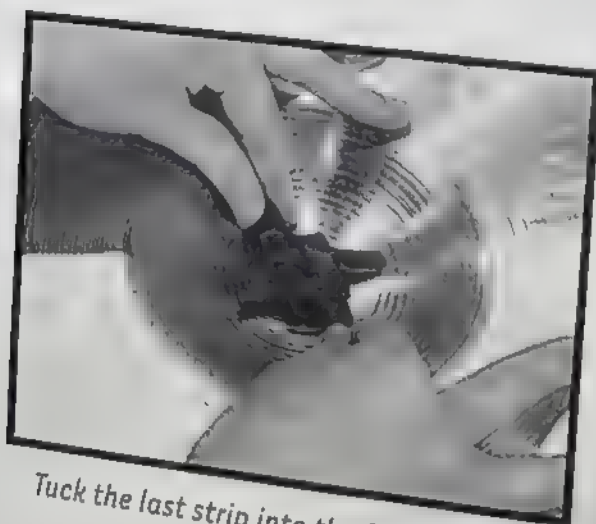
# Here's how to tie your cymbal knot:



*Pull the strap through and separate the four strips*



*Now loop each strip over the one next to it.*



*Tuck the last strip into the fold created by the first.*

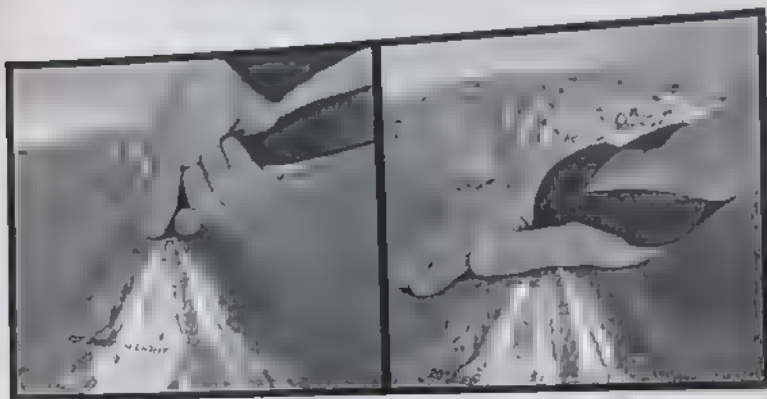


*If the straps stretch and pull through the cymbal, you can place a penny inside the knot.*



### Basic orchestral cymbal crash technique for mezzo-piano and louder

Each crash will have three parts to it: the prep gesture, the crash, and the follow-through. Practice first, by trying to isolate these individual steps, then work to make them one fluid motion.



Regular, concert-style grip (left). Marching-style grip (right) isn't necessary in the front ensemble.

**Grip** the cymbals at the base of the strap using your index finger and thumb. There is no need to put your hand inside the strap. This is for marching cymbal players only.



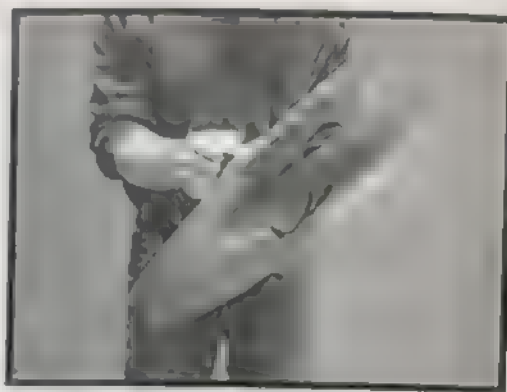
**Start by holding the cymbals at approximately a 45 degree angle.** Make sure the cymbals are not making contact with your arms or chest. Anything touching the cymbals will dampen the overtones.



The **prep gesture** is the equivalent of a breath to a wind player. This usually occurs one beat before the crash, depending on the tempo of the music. At this point, lift the cymbals apart in time with the music. If the prep gesture is performed in time, the crash will be in time. For this style of crash, the cymbals will come apart at a slight angle. It is very important that *both* cymbals move.



The crash will be a **grace note** or **flam** style crash. That is to say, as you crash the cymbals together, the edges that are angled in toward each other will strike first (the grace note), then the rest of the cymbal will provide the main body of the crash. Once again it is vital that both cymbals participate in the crash. If the grace note is too wide, "ca-rash," decrease the angle size. If the angle is too shallow, you will get an "air-pocket" sound.



*First contact (grace note)*



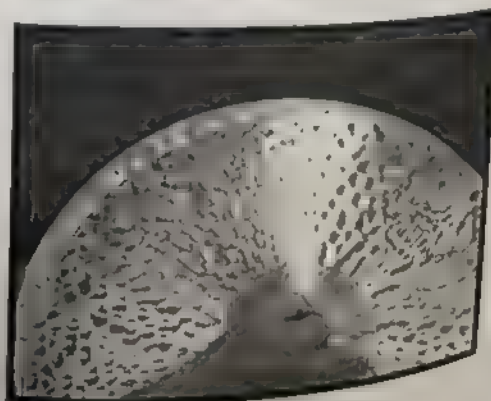
*Second contact (main note)*

After the crash, simply **follow-through** by pulling both cymbals apart and resuming the starting position. No visuals are necessary in the pit. Most instructors agree that the pit should *not* be a part of the visual focus.



*Follow-through*

Displacing the cymbals slightly and creating a crescent shape at the edge will help the air escape. This will help to get a full sounding crash. Getting the angles correct takes a bit of practice and each pair of cymbals feels a little different. Be patient and practice with ear plugs!





### Basic orchestral cymbal crash technique for piano and softer

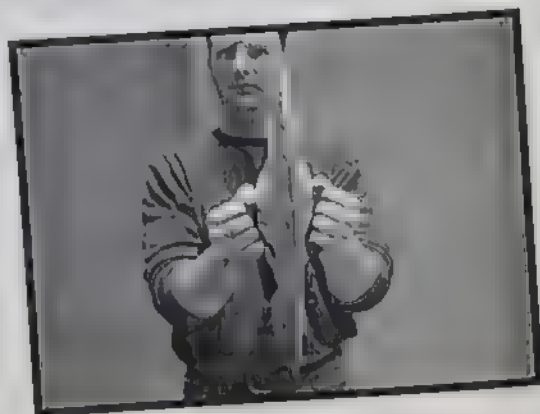
This crash style will still have the same three elements, prep gesture, crash, and follow-through, but they will be performed in a different manner.



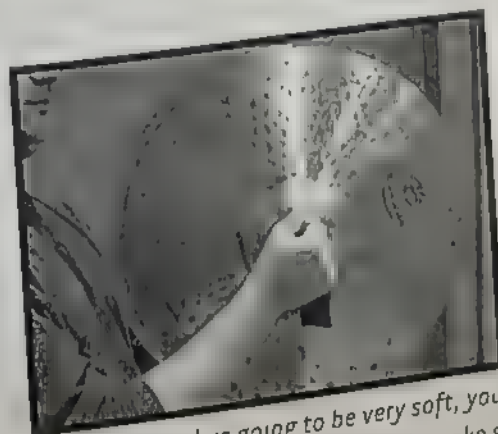
Start with the cymbals parallel to each other, about 2 inches apart, and held in front of your face. You can actually use one eye to stare between the cymbals to make sure they are perfectly even.



The **prep gesture** will be very small. Simply take a breath in time with the music and pull both cymbals apart, but only about  $\frac{1}{2}$  inch!



**Crash** the cymbals. Again, no angle is needed with this crash. Make sure both cymbals move towards each other. Don't make one a target for the other. Now, simply **follow-through** back to the starting position.



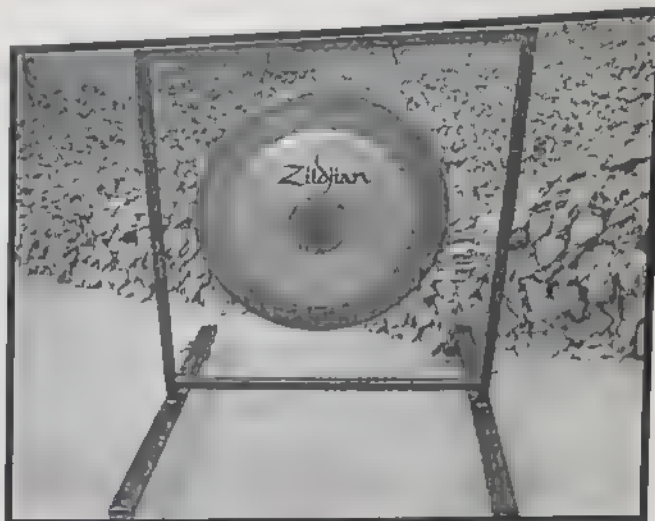
Since your crash is going to be very soft, you don't need to crash at an angle. Simply make sure the cymbals are slightly displaced.

## TAM TAM

The tam tam is often mistakenly called a gong. What's the difference?

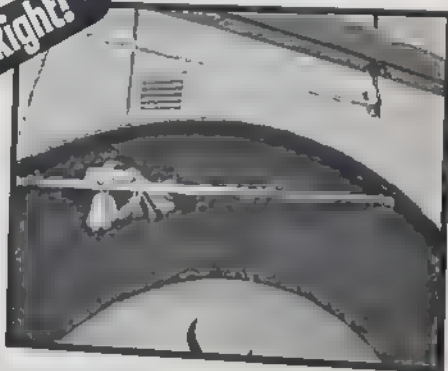
**Gongs** are most often smaller instruments with a specific pitch, whereas the **tam tam** (pictured here) has a complex blend of overtones with no specific pitch. The tam tam is the more commonly used instrument of the pit ensemble.

Lingo aside, these terms are still used interchangeably by composers, teachers, and conductors.



Tam tams sound best when hung from **braided rope**. Due to the weight of the instrument, the rope will eventually need replacing, so keep your eye out for fraying rope. You don't want to hear what it sounds like when the rope breaks! Avoid hanging your tam tam with **wire cable**. While this is great for durability, the metal fibers that make up the cable actually absorb a lot of the vibration from the instrument itself. You will get much more resonance using rope.

**Right!**



**Wrong!**



Also be careful **how the tam tam is hung**.

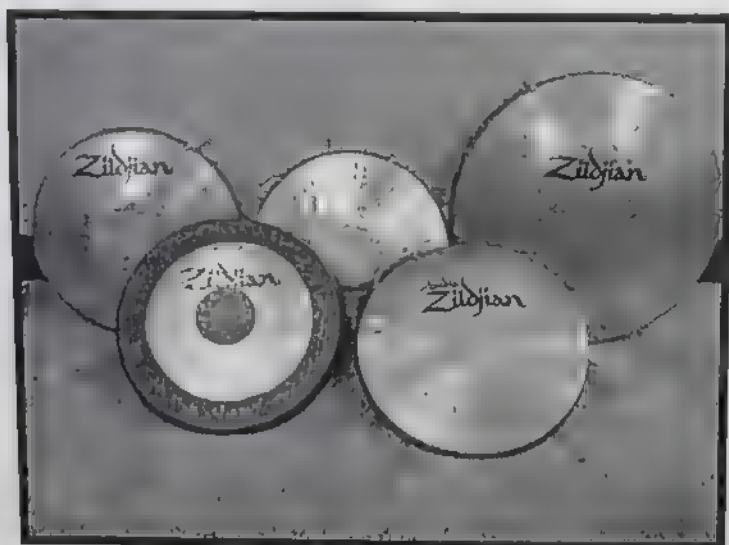
It should hang directly from the rope that comes out of the **front** of the instrument (outside the curved edge). If you hang it from the other side, the rope will dampen the instrument dramatically!

Tam tams are another pricey investment and must be played properly to avoid cracking. Start with a **mallet** that is designed for tam tams (not a bass drum mallet) and is the appropriate size for your instrument. Next, no matter how soft the part is, always **warm up** the instrument by tapping it lightly with the mallet. This will get the metal moving and prevent it from being "shocked" by a loud strike. Next, **strike** the instrument half way between the center and the edge. This will provide an excellent



blend of overtones. Because the instrument has so much sustain, good quality **rolls** can be achieved with one mallet by striking repeatedly. You can also use two hands, rolling slowly.

Several interesting **effects** can be created with the tam tam. A pitch bend can be created by striking the instrument and lowering it into a tub of water. You can scrape the instrument with a coin or triangle beater or try bowing it with a cello or bass bow to get a "screeching" sound. You can also gently strike the instrument with a hard xylophone mallet (even brass mallets if you're careful) or try striking the instrument with a tam tam mallet, then gently placing a Dread Lock on it to create a sizzling sound.



## VARIOUS OTHER GONGS

As you can see here, there are several other types of gongs. Some of the more unique sounds include: opera gongs, wind gongs, and boss (nipple) gongs. **Opera gongs** are usually 8 to 12 inches in diameter and produce a pitch bend when struck. Some opera gongs are designed to bend the pitch down, some to bend the pitch up. **Wind**

**gongs** are extremely thin gongs and range in diameter from 18 to 24 inches. These gongs have a tam tam-like sound (a complex mix of overtones) and are extremely sensitive. They can be played effectively with a marimba mallet or even the finger tips. **Boss, or nipple, gongs** have a raised dome in the center, like a cymbal. By striking the gong on this raised dome you can get a clear, fundamental pitch. These gongs are sold individually and in chromatic sets.

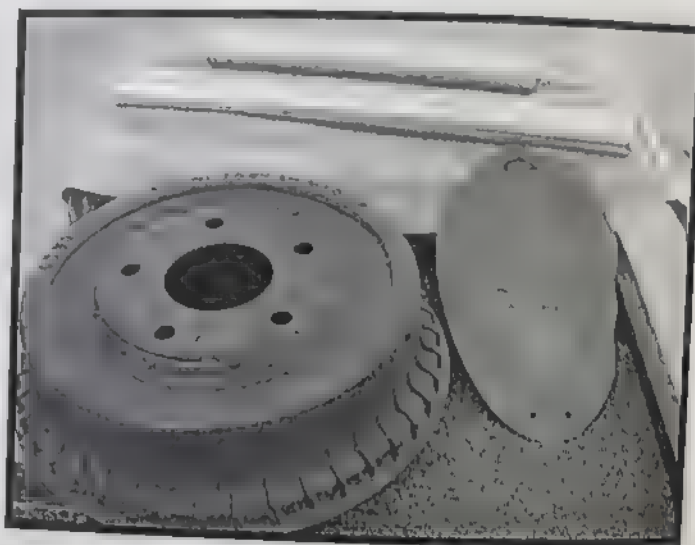
## Other Percussion Instruments

The percussion family is without a doubt the largest and most varied collection of instruments in the world. There are various smaller percussion instruments, sometimes called "accessories" or "auxiliary percussion," that are quite common in marching bands and drum corps. For the purposes of this book, these instruments have been categorized into three classes: **Accessory Percussion**, **Special Effects**, and **World Percussion**.

### Accessory Percussion (listed alphabetically)

#### ANVIL (and related instruments)

The following instruments are known for their "aggressive" metallic sounds: anvils, brake drums, oxygen or propane tanks, railroad tracks, frying pans, Remo Spoxe, and metal pipes. In fact, a few hours at your local salvage yard or automotive wrecking facility will help you to unearth even more goodies that would fit nicely in this category. A fresh coat of paint will give them that fancy "store bought" look.



These instruments are typically played with very hard mallets (or even hammers) to achieve bright and piercing sounds. These instruments are also known for *destroying* very hard mallets (or even hammers)! In other words, you may not want to pull out your best xylophone mallets for the frying pan cadenza. On the gentler side, these instruments can create some very unique sounds when played with soft rubber or hard yarn mallets. For example, three to four brake drums of different sizes, played with soft mallets, can provide a wonderful nipple gong type sound. Experiment!

#### BELL TREE

When played with a hard xylophone mallet or brass mallet, the bell tree will provide a brilliant bell glissando effect. What's great about this effect is that there is not too much sustain, in other words, it gets out of the way very quickly. This can be crucial in certain ensemble situations. Also, experiment with striking individual bells on the tree. This can be a great sound when definite pitches aren't a concern.



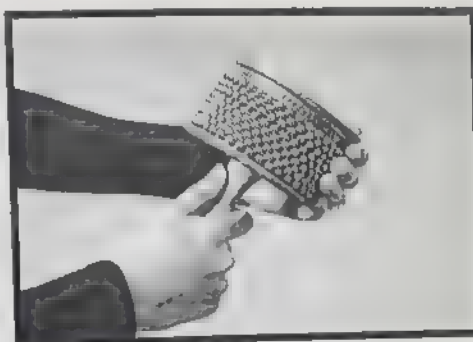


## CABASA (or Afuche)

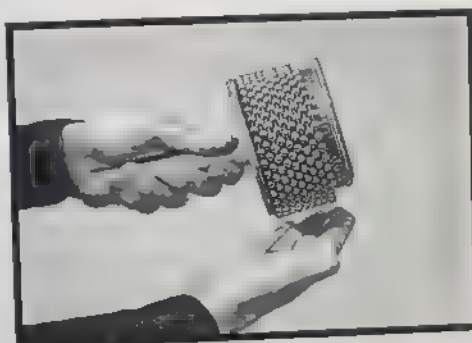
The cabasa, or afuche, can be a great addition to Latin-American music or any style of commercial music. This instrument can provide a shaker-type sound, but with much more rhythmic control.

Two important techniques for this instrument are "scraping" and "tapping." To achieve the **scrape sound**, hold the handle in your strong hand and the beads in your weak hand. Simply rotate the handle back and forth with your strong hand.

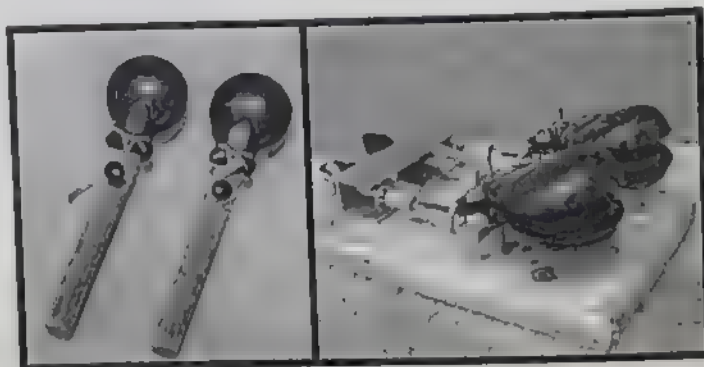
To get a **tap sound**, hold the cabasa by the handle and tap the loose, hanging beads with your other hand. By combining these sounds with some well-placed accents, you can create some great grooves.



*Cabasa "scrape" technique*



*Cabasa "tap" technique*



*Pictured here are both paddle-style, and machine-style castanets.*

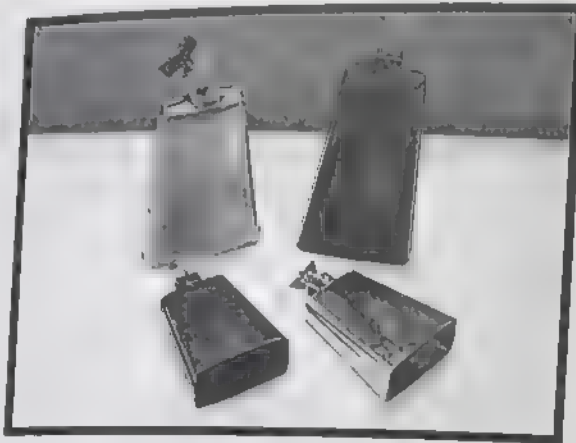
## CASTANETS

Castanets come in several varieties. The instruments themselves can be made of hardwood, which is more expensive and sound best, or they can be made of plastic. The plastic variety may be more ideal for the rigors of outdoor playing. The castanets may be mounted on paddles or mounted machine-style.

**Paddle castanets** can be played by striking the castanets on your leg while the machine variety can be played by tapping the castanets with your fingers. Generally speaking, the paddles will allow for more volume and nice roll effects, while the **machine** will allow for more rhythmic accuracy. If you're after serious volume from your castanets, try playing the machine castanets *with* the paddle castanets.

## COW BELLS

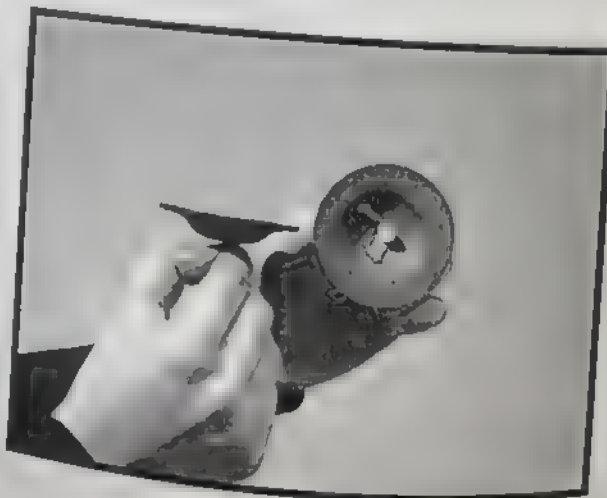
There are a zillion different types of cowbells on the market today: rock cowbells, songo bells, mambo bells, cha-cha bells. All have their place in different styles of music. Remember, when playing outside **tone means projection**. Try to find cowbells that have a bit of sustain and natural tone to them. Latin Percussion (LP) has what they call the "Salsa" line of cowbells. All of the models in this line have a beautiful tone and work well outdoors.



Cowbells can be played with any variety of drum stick. Experiment with playing on the mouth of the bell with the shoulder of the stick (left picture), or on top of the bell with the bead (right picture) You can create some great grooves by combining these two sounds.

## FINGER CYMBALS

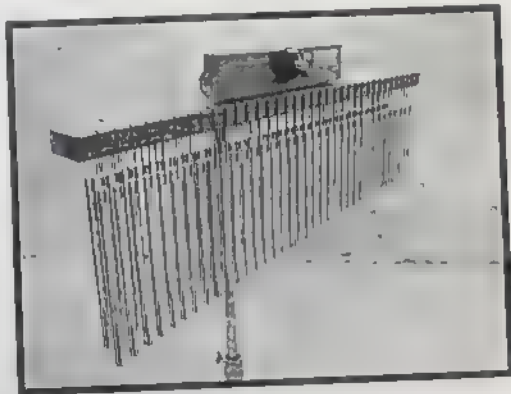
Finger cymbals can add a great flavor to some of the more "transparent" sections of your music. The key to getting a full sound out of these little cymbals is to strike them "edge to edge." If you play them as if they were regular hand cymbals, flat surface to flat surface, you will get a less than desirable metallic, clunk sound. A single finger cymbal can also be mounted and struck with a triangle beater or several finger cymbals can be strung together and mounted. This "line" of finger cymbals can be shaken or scraped with a triangle beater. Good quality finger cymbals can be purchased from Zildjian in thick (high-pitched) or thin (low-pitched) models.





## MARK TREE

A mark tree is a specific type of wind chime, with graduated sizes of metal rods (solid or hollow). The graduated sizes allow for glissando effects by running your finger up, or down, the instrument. As with the bell tree, you can experiment with striking individual rods with a hard mallet when definite pitches aren't a concern. Take great care in transporting this instrument. Try to find a separate bag or case specifically for it.

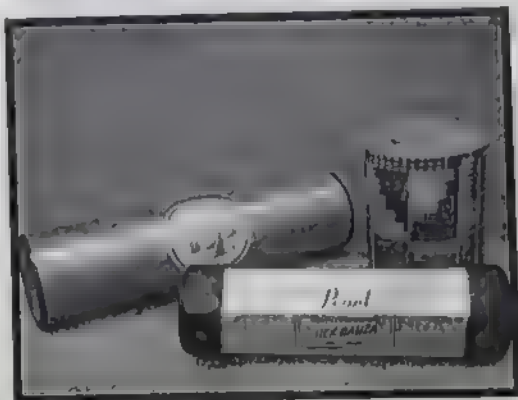


Unfortunately, those of us who experienced drum corps in the 1980's have a love-hate relationship with this instrument. It was simply used far too much. We apologize. Luckily, after a short ban of the instrument in the 1990's our pallets are clear.



## RATCHET

The ratchet is a great sound effect for many types of music. It can create aggressive "noise" or even provide comic relief. Keep in mind that speed equals volume. The faster you crank the handle, the more sound you will produce.



## SHAKER

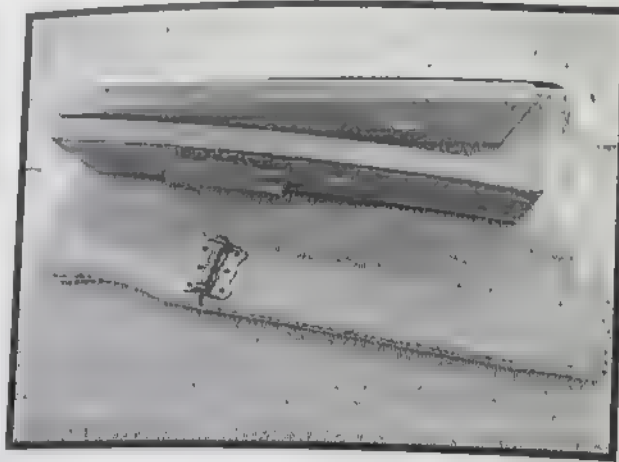
There are many types of shaker on the market today. The sound and volume created by these shakers depends on the construction of the container (metal tube, wicker basket, soda can, etc) and what material is being shaken inside (different sized ball bearings, sand, etc). For this reason, it's a good idea to have a few different types on hand.

*Pictured here are a variety of shakers.*

Shakers will add a necessary flavor to many types of music, but beware: this is a very demanding instrument to play. Realize that rhythmic accuracy is difficult since the instrument makes a sound during the "downstroke" and the "upstroke." To control this, use short, controlled strokes and keep the wrist firm. Many directors and instructors will give shaker parts to their less experienced players which can be quite dangerous. "Groove" instruments, like the shaker, are what holds the pit together; rhythmic accuracy and ensemble awareness are imperative!

## SLAP STICK (a.k.a. Whip)

Slap sticks come in two basic varieties: the spring-loaded-single-handed-action or the non-spring-loaded-two-handed-action. The spring-loaded variety tends to be smaller and higher pitched. They are nice for fast, articulated rhythms and for performers who only have one free hand. The non-spring slap sticks are usually larger and much louder.



*Two commonly found types of slap sticks.*

**Construction** of this type of instrument is very easy. All you need is two lengths of 2x4, a hinge, and a few screws. If you use a thinner piece (1x3, etc), you may need to add handles, cabinet handles for example, to the outside of the slap stick. This will keep everyone's fingers happy. A few companies make plastic slap sticks which work quite well outside.

## SLEIGH BELLS

Sleigh bells are non-pitched, and are usually mounted to a wooden handle or strap. The most common model you'll find in your local music store is made with **steel chrome bells**. These sleigh bells have a very bright sound. You may also find sleigh bells that are made from **brass**. These have a darker sound, and are more reflective of what you might hear pulling Santa's sleigh (it's true...). You can create some interesting sounds by combining the two varieties.

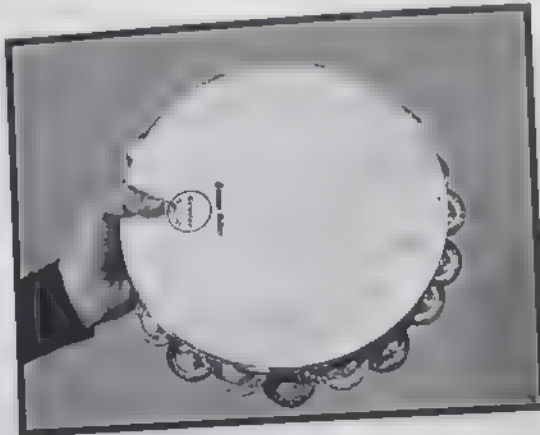


*Pictured here is a homemade combination of brass/chrome sleighbells which sounds more unique than the standard chrome sleighbells (pictured below).*



To play articulate passages with the sleigh bells strike one hand against the butt of the handle. There will be a slight delay in the bell's response when playing them this way, so it's best for the performer to be "on top" of the beat. Also try playing **sustained rolls** by gently shaking the sleigh bells.





## TAMBOURINE

There are a large variety of tambourines made today. The best instruments are made by either Grover, or Black Swamp Percussion. The main features which affect the sound of a tambourine are: the type of metal the jingles are made of, the amount of jingles (single row or double row), and the head.

In general, the lighter the **jingle metal**, the brighter the sound. Silver jingles are much brighter than copper, and copper is brighter than bronze. The varieties are endless, so for general use, a good copper (or copper/silver combo) tambourine, with double-row jingles and a real skin head is your best bet. Keep in mind that if you perform in humid environments, these heads will loosen significantly with the weather. Keep it away from moist air and grass whenever possible.

This is probably one of the more difficult accessory instruments to play! There are a variety of tambourine techniques that exist. Below, we'll cover just a few.

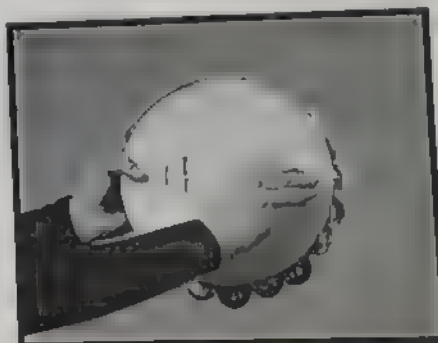


### Holding the tambourine

If you are right-handed, hold the tambourine in your left hand. Grab the frame with all of your fingers, and wrap the thumb around so it is touching the head surface. This helps to dampen the head.



Some performers will use their middle, ring and pinky fingers to dampen the head as well.



Hold the tambourine at about a 45 degree angle to prevent the jingles from rattling during rests.

### The basic tambourine stroke

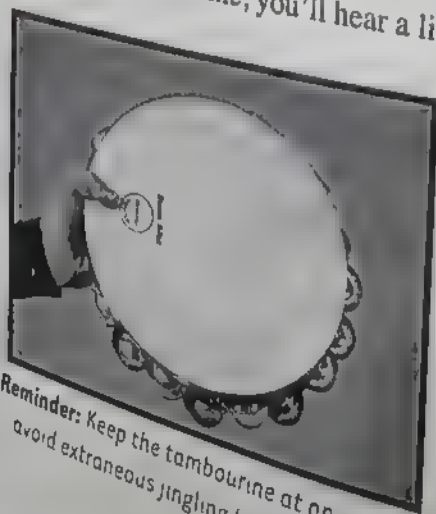
Strike the tambourine near the edge with the fingertips of your free hand. Do not strike your free hand with the tambourine! Furthermore, don't whack the tambourine against your leg, hip, or any other object for that matter. The main goal of the basic tambourine stroke is to **create one sound**. If you are striking the tambourine against another surface, you will not only hear the sound of that impact, but you'll also hear the "upstroke" or motion of the tambourine. So, in general, try to keep the tambourine from moving any more than necessary.

For hearty sounds, make a **fist** and use the flat portion of your fingers to strike the head of the tambourine.

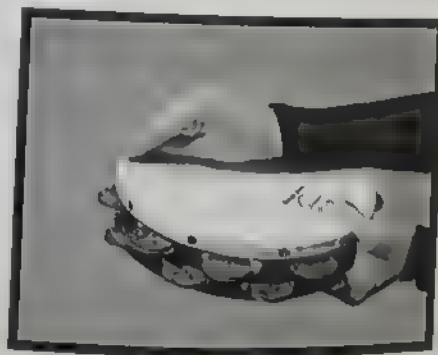
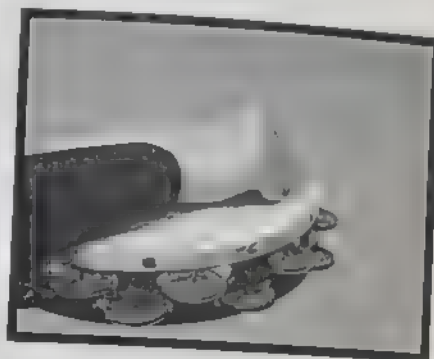
For very loud accents, strike the head with a **flat hand**. Since the hand is covering a lot of the head's surface you will get a nice "pop" sound without damaging the head.

For more delicate sounds, use the **fingertips**.

Based on the music being performed, you should experiment with striking the tambourine in different areas. At the very edge (over the frame), you'll find the sound to be quite "dry." If you strike the head an inch or so from the edge of the tambourine, you'll hear a little more tone.



**Reminder:** Keep the tambourine at an angle to avoid extraneous jingling between strokes!

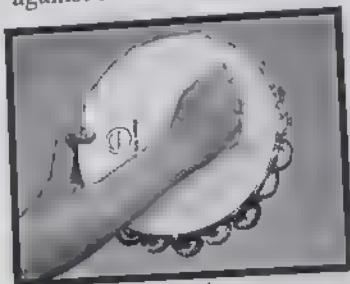




## Basic Rolls

For basic rolls, the tambourine is shaken with one hand by using a short, **twisting motion with the wrist**. The motion should be similar to the way you would turn a doorknob. Most often, it's good to initiate the roll with an attack from the free hand, and to stop the roll with a release (also with the free hand). For loud rolls, rotate the wrist farther to create more velocity in the jingles. For softer rolls, an ever-so-slight rotation should be used. This can be extremely difficult to control, so it's a good idea to spend some time practicing and getting used to keeping your muscles relaxed and under control.

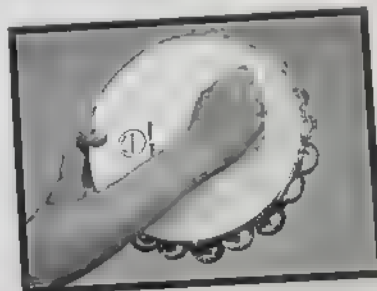
During the roll, hold the tambourine **vertical to the ground** so the jingles can rattle freely against each other.



Attack



Sustain (shake)



Release

At the end of the roll, bring the tambourine back down to the stationary, angled position. The motion in which you start and end these rolls should be quick, and should happen in rapid conjunction with the attack and release. Since you are probably holding the tambourine with your "less coordinated" hand, it may take a little time to get used to this motion. It's not a motion your wrist and arm are used to doing repeatedly.



## Thumb Rolls

The thumb roll is another common technique for the tambourine.

Start by placing the thumb back by your gripping hand. Following the perimeter of the tambourine frame, glide your thumb over the head, letting the "meat" of your thumb vibrate against the surface.

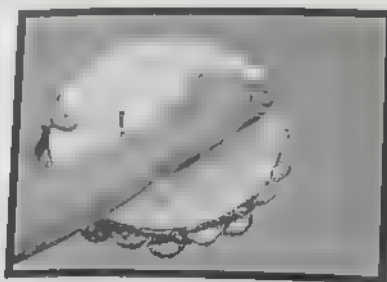
If you press too hard, you probably won't get the friction necessary to produce this effect. If you are having a difficult time making this happen, you might try wetting your thumb with your tongue. You may also apply a thin layer of **beeswax** to the perimeter of the head to add some extra friction. Once you've gotten the feel for this technique, you can experiment with different levels of **pressure** for different sound qualities. A very light pressure will achieve a more "coarse" sounding roll, whereas a firm pressure will give you a very "tight" sustained quality.

You may want to give your thumb roll a marked point of release. This can be done by pivoting the heel of your hand down against the tambourine.

You may also try turning your hand at the end of the roll and allowing the fingers to tap the tambourine for a release. For a great example of this technique, check out Stravinsky's "Gypsies and a Rake Vendor" from "Petrushka."



Heel release



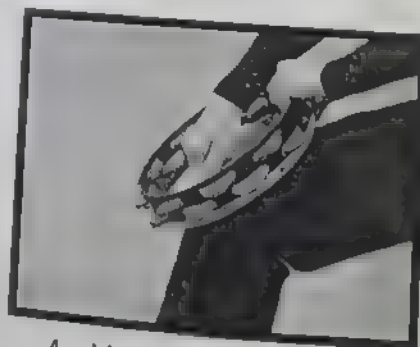
Fingertip release

### Fast Articulate Passages

There are essentially two ways of performing fast articulate passages on the tambourine: knee/fist style, and with the fingertips. Though many young performer's instinct is to pull out a pair of snare sticks and play the tambourine like a snare drum, this should never be done unless the composer or arranger asks specifically for this effect.

### Knee/Fist Style

This style is best for **loud and fast passages** (mezzo-forte and louder). The performer will need to bend and elevate one knee. This is best accomplished by putting a foot on a short plastic step. These can be purchased at most hardware stores. Chairs are usually too tall and won't enable the performer to play the tambourine at the proper angle.



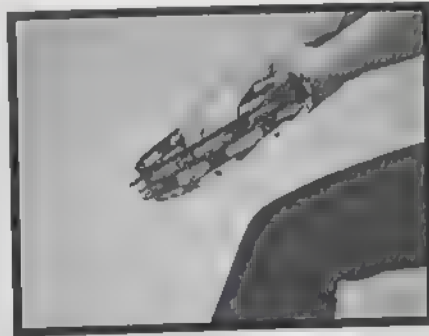
Avoid using a chair for this technique

While holding the tambourine at a 45 degree angle, strike your bent knee, then, as you lift the tambourine, strike it with the fist of your free hand. It takes a bit of coordination and practice to get a smooth sound. Start by trying to play even sixteenth notes between your knee and fist. Then create your own syncopated passages. Experiment with playing zones to try and match the sound between your knee and fist. The tambourine head can be facing up or down.





**DOWNSTROKE:** Strike the tambourine against your bent knee



**UPSTROKE:** As you lift the tambourine back up, strike it with the fist of your free hand.



*This technique offers more control for soft, articulate passages.*

### Fingertip Style

This style is best for **soft and fast passages** (piano and softer). Simply place the tambourine on the elevated leg, with the head facing down. This will completely dampen the head. Now, place both hands on the tambourine and tap the rim with the fingertips from either hand.



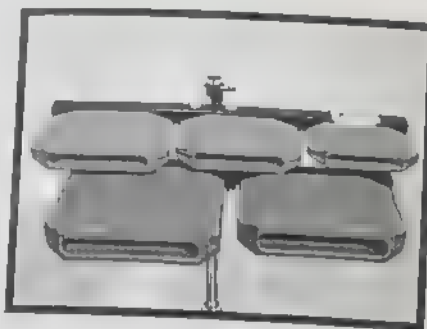
### Rhythm Tambourine

When you simply want to **ROCK**, the rhythm tambourine is a great way to throw in some groove. A good rhythm tambourine is headless with bright, chrome jingles. Rhythm Tech invented the quintessential rock and roll tambourine with its unique shape. These tambourines have a comfortable handle to grab onto, and the half-moon shape distributes the weight of the instrument evenly around your hand.

Sixteenth-note grooves are most common on this instrument. They are played by shaking the tambourine **back and forth** using a standard drumming-style wrist motion. **Backbeat accents** can be added by striking the tambourine against your other hand, or leg. Yes, this is where we break the rules mentioned above! This doesn't take as much practice to master as some of the previously mentioned techniques. However, it can be tricky to create *even* rhythms on this instrument. It's important that the player can identify with the necessary groove for non-stop rocking.

## TEMPLE BLOCKS

Temple blocks usually come in sets of five blocks, and are tuned to a pentatonic scale. They sound best when played with a soft to medium rubber or yarn mallet. For outdoor use, LP's Granite Blocks are excellent. These are plastic blocks and they can handle quite a bit of abuse. If you use real, wooden temple blocks, take care not to use too hard of a mallet or overplay the instrument, they will crack!

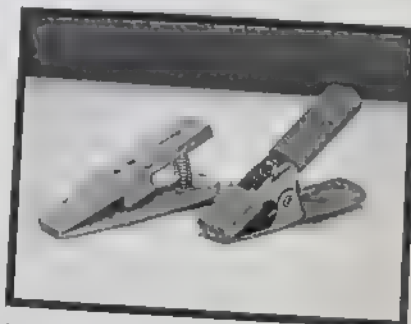


Pictured here are LP's "Granite Blocks" which work well outdoors.

## TRIANGLE

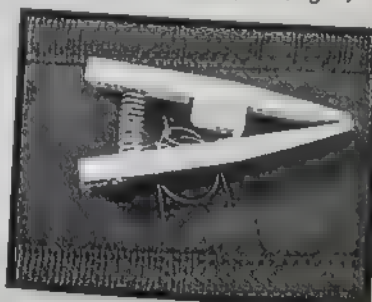
Unfortunately for our triangular-shaped friend, this is one of the most often, incorrectly played instruments in the percussion arsenal.

You will need to start with a good quality clip, either one specifically designed for triangles, or just a good ol' hardware store clamp. Wooden clips or small hardware store clamps with rubber sleeves on the gripping area work the best.

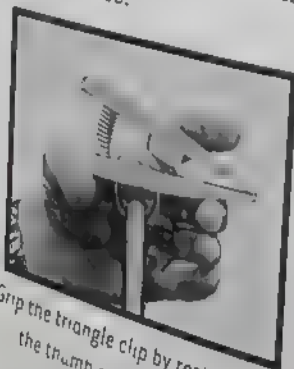


Professional Grover clip (left), or a few bucks at Home Depot (right).

Next you will need a short length of thin fishing line to hang the triangle. Contrary to popular belief, yarn, string, ribbons, and shoe laces just don't do the trick. They will actually muffle the sound of the triangle. Hang the triangle with a single piece of fishing line so it hangs about  $\frac{1}{4}$  to  $\frac{1}{2}$  inch from the clip. Add a second piece as a **safety-catch** to insure there are no unfortunate line-breaking accidents during a performance.

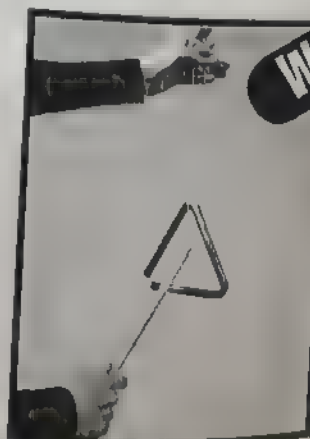


Close-up of safety catch.



Grip the triangle clip by resting it on the thumb and middle finger.

If your fishing line is too long, the triangle may start to spin out of control and you will not be able to dampen properly with the holding hand.



**Wrong!**

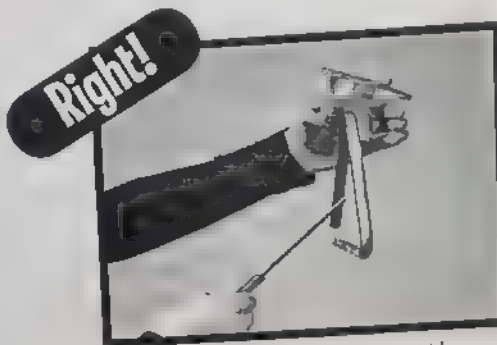


As for the actual triangle, the **6-inch size** is a good place to start. Alan Abel and Neil Grover make outstanding triangles, which are highly recommended. Other sizes can add some great colors to your palette (4-inch or 9-inch). If you've spent a good amount of money on your triangle, you will want to play it with actual **triangle beaters** (as opposed to tension rods, drum keys, screwdrivers, drumsticks, or anything else you may find on the band room floor).

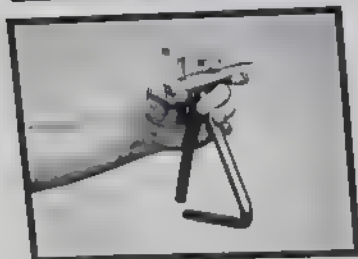
As for playing the instrument, we've all heard the story about holding the triangle up at eye-level so everyone can see you perform proudly. Not only does this allow people to see the instrument, but this will also allow you to **strike** the instrument correctly. The triangle should be struck at a 45 degree angle in order to get all of the overtones to "speak." If you strike the triangle "flat" to the playing surface, you will get a distinct pitch. This isn't what we're looking for in a triangle sound.



*This is an example of a bad grip and improper playing angle.*

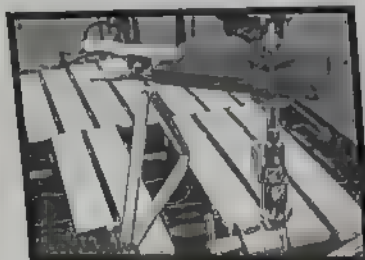


*Striking at an angle produces prettier overtones. Be sure the beater is very relaxed in your hand, this will help you avoid a "clanky" sound.*



*The triangle can be **dampened** with the holding hand by tightening your fingers around the instrument.*

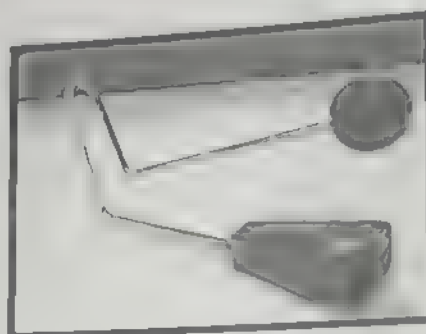
**Rolls** can be played by placing the beater inside the triangle and alternating between two sides of the instrument. If you roll between three sides of the triangle you are playing "dinner-time" style. This should be avoided unless you are performing on a dude ranch...then by all means, play this way.



Sometimes the performer does not have a free hand and has to **hang** the triangle. This is perfectly acceptable, but try to avoid hanging the triangle on a stand that will vibrate, like a music stand. Try using a small piece of ply wood mounted to a cymbal stand (as pictured here). This will also allow the performer to play fast passages with two beaters. Remember, the triangle still needs to be hung high enough for the performer to strike at the proper angle.

## VIBRA SLAP

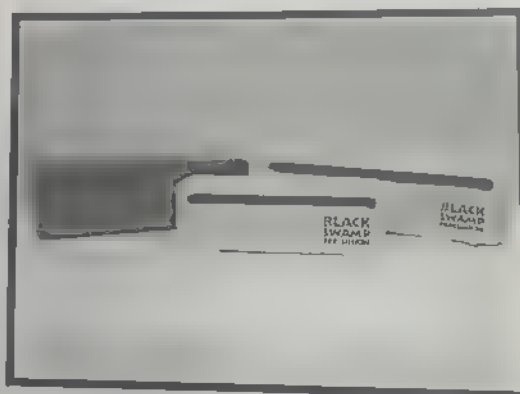
This instrument causes more "percussionist envy" than any other. The vibra slap is a modern instrument, originally derived from the jawbone of an ass...seriously. The lower jawbone of an ass was dried, then struck with the hand, causing the teeth to rattle. Today's version is much more popular among animal lovers.



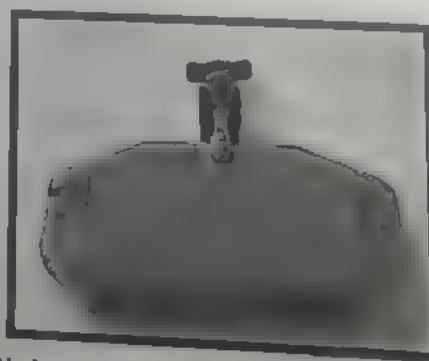
## WOOD BLOCK

Wood blocks may be constructed from a variety of hardwoods: rosewood, walnut, oak, or maple to name a few. While these sound the best, as you may have guessed, they are much harder to maintain. Even when played properly with the correct mallet, a hardwood block will crack over time.

Though you will sacrifice a bit of the characteristic sound, **synthetic blocks** may be the best answer for outdoor playing. LP's jamblocks are the best on the market. These familiar red or blue blocks are practically indestructible. They can be played with practically any kind of **stick**, **yarn mallet**, or **rubber mallet** and still deliver a cutting sound.



*Different sized wood blocks vary in their sound characteristics.*



*LP's **Jam Blocks** speak well outdoors and are extremely durable.*



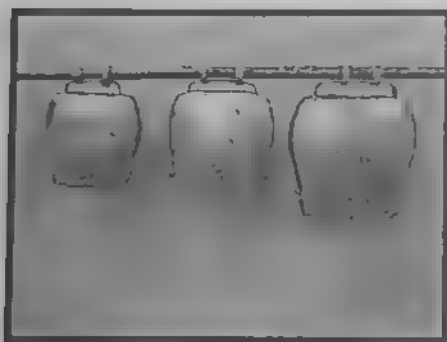
## Special Effects (listed alphabetically)

### AIR RAID SIREN



Air raid sirens come in two basic flavors: **electric** and good ol' fashioned **crank** style. When you write for this effect realize that it takes some time for the siren to get to its full volume. The time will vary depending on the type of siren you use. The siren will also take a bit of time to wind down. At the Vanguard, we throw a heavy packing blanket over the siren to cut down the volume during its wind down. We also have fun experimenting with placing the siren on different parts of the field. It will cut through no matter where you put it!

### ALMGLOCKEN



Almglocken are a relative of the cowbell, but they are tuned to **specific pitches**. These bells have a rounded shape and usually have a gold-colored finish. They are sold in chromatic sets up to three octaves! Unlike the cowbell, these instruments are quite **fragile**. Because they are a tuned instrument, they can be banged *out* of tune very easily. Almglocken should be played with a medium to soft rubber or yarn mallet. They should never be played with a drum stick!

You will have to build your own **rack** for the almglocken. Try to suspend the instruments from a pipe with metal ring fasteners or velcro. The mouth of the bell should face the ground. This will alleviate stress from the handle. Almglocken sound amazing when blended with any keyboard instrument.

### ANKLUNG



*A diatonic scale of anklung.*



*Individual anklung.*

Originating from Indonesia, anklung are tuned, bamboo rattles which are traditionally used in gamelan music. These are usually sold in diatonic octaves (C to C). They are fragile and will require a case for travel, though they are an extremely unique sound!

## BELL PLATE

Check out the opening of the 1987 Santa Clara Vanguard show, and you'll never forget the powerful sound of bell plates. Bell plates work well outdoors due to their extreme "cutting power." They can be struck with acrylic **hammers**, or if your eardrums are so daring, ball-peen hammers for that added "ice pick to the forehead." For your gentler moods, you can also experiment with softer **mallets** to get a subtle tuned gong effect. Paiste's "sound plates" are one popular version of this instrument.

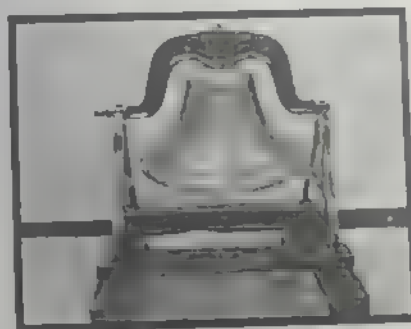


## CAR HORN

Car horns are a popular effect for many contemporary composers. Their most popular use is in Gershwin's *American in Paris*. There are a few basic types: klaxon horns, bulb horns, or battery operated electric horns with switches.

## CARILLON BELL

This bell means business. The carillon bell is essentially a church bell. It is very large, and made of cast bronze, with a **clapper** inside. **Don't** make the mistake of using a mallet or hammer on the outside of the bell as it may crack.



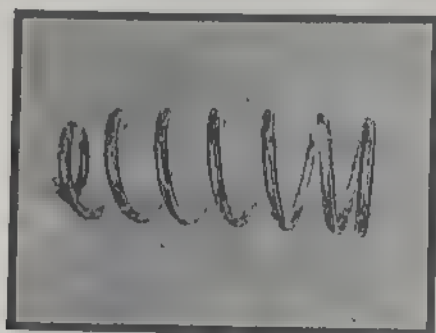
## CHESTNUTS

The shells of chestnuts can be "sewn" together to create a hand-held rattle. This can be shaken for a bamboo wind chime effect or you can gently tap the chestnuts on the shell or head of a drum (they sound great on the shell of a concert bass drum). Meinl Percussion makes a great synthetic substitution called "Birds." Birds consist of a string of hollow, hemisphere shaped, fiberglass shells. They project very well outdoors and can add a nice dash of atmospheric color in certain situations.



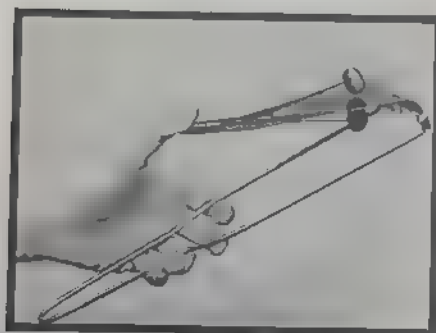
Meinl "birds" (laying down), and a cluster of chestnuts (being held).





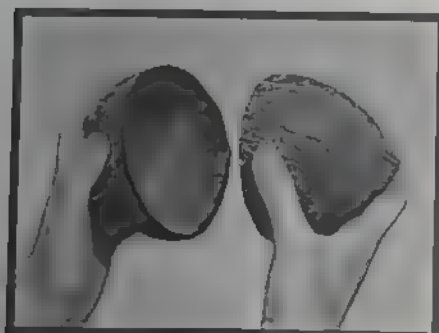
### COIL SPRING

These are automobile coils which magically become metallic instruments when removed from a friend's car. When struck with metal beaters, they produce a springy, metallic sound. Like a triangle, the coil should be suspended from thin string or fishing line so it is allowed to resonate freely.



### FLEXATONE

Though this instrument is often treated as a "toy," with a little musical creativity, it can create an eerie "musical saw" effect. If the performer has a well-trained ear, they can actually play melodies with this instrument. Check out the Santa Clara Vanguard show from 2001.



### HORSE'S HOOVES

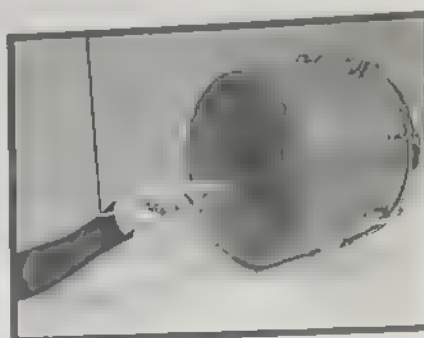
This instrument can be seen and heard in the movie "Monty Python and the Holy Grail." While its musical applications may be limited, it is an interesting special effect. Two hollowed out coconut shells are struck against a piece of wood, a wooden box, or each other to produce the sound of horse's hooves.

### JINGLING JOHNNIE

Who gave it this name? Who knows, but it's easy to remember. Typically, this instrument is a long pole (like a closet dowel) with jingles and bells attached. Authentic jingling johnnies have a crescent shaped piece mounted perpendicular to the pole. For this reason, this instrument is also known as a **Turkish Crescent**. It is played in the upright position, by striking the pole against the ground. This is an essential piece of equipment for such works as Saint Saens' "Bachanalle" from "Samson and Delilah." Check out the 1990 Phantom Regiment show.

## LION'S ROAR

The lion's roar is a friction drum, similar to the Brazilian cuica. Essentially, the lion's roar is a single-headed tom tom (medium to large size) with a long string attached *through* the center of the head. The performer simply pulls a well-resined piece of leather along the string to create the roar of the lion. Obviously the size of your lion will depend on the size and tuning of your drum.



## MARCHING MACHINE

It's no mystery how this instrument got its name. One of the more "literal" effects, the marching machine is comprised of several wooden rods loosely suspended from ropes which attach to a square frame. The frame is then lowered in a sort of "rocking" fashion onto a hard surface, preferably a hollow box for added resonance. Check out the 1991 Santa Clara Vanguard, or the 1993 Cadets of Bergen County for two different versions of the same instrument.



*This inexpensive marching machine was homemade using PVC pipe, wood, rope, and lots of drilling.*

## OCEAN DRUM

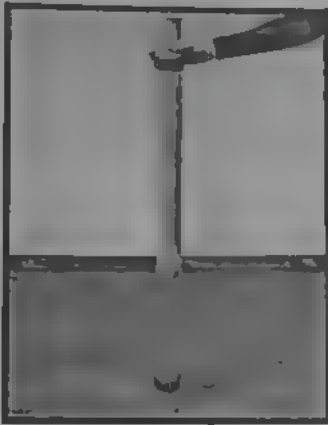
Ocean drums are simply tom toms filled with small ball bearings. When the drum is gently rotated the ball bearings roll around on the head creating the sound of waves on the beach. The effect is beautiful, but not powerful enough to cut through an ensemble. Ocean drums can be used when the band scoring is very thin or if sound reinforcement is used (microphone and speaker). There are a few manufacturers that make a good quality ocean drum, or wave drum, but they are quite simple to make.



## POP GUN

Not much explanation needed here. If anything, some people may be surprised to know that this instrument is called for every now and then. For a while, Vic Firth Inc., made a very reliable pop gun with a great sound that never failed to "pop"! If you can find one of those, they're great!





### RAIN STICK

The best sounding rain sticks are made from dried cactus plants. They are hollowed out, the sharp spines are pushed into the middle of the cavity, and loose seeds are added. When turned on end, the seeds cascade down the spines, creating a rain drop effect. There are many synthetic rain sticks available which are made from plastic. This instrument is nice to use as an atmospheric effect.



### BIZZLE STRIP

This cool effect is created by a long strip of sheet metal which is attached to a small block of wood. This block will mount onto a standard cymbal stand. Simply strike the metal with a drumstick or mallet, and you'll get a splashy, industrial sound with a touch of vibrato. You can hear samples of this in the Santa Clara Vanguard's 2002 opening production, "Trivandrum."

### THUNDER SHEET

This instrument is simply a large piece of thin, sheet metal. In other words, experiment with the hardware store variety before you spend too much on one from your local music store. Believe it or not, stainless steel sheet metal has a much darker sound than the more common galvanized sheets. Check with a local machine shop or sheet metal shop. You'd be amazed at the variety in sound qualities available.

The thunder sheet should be **suspended** by string in the same manner as a tam tam. You may need to drill two small holes in the top of the sheet to do this. To create "thunder," hold the sheet by the string and **shake it**, or play it with a soft yarn or felt **mallet**. Single strokes from a very soft felt mallet can create a nice tam tam effect. For some nice samples of thunder sheet sounds, check out the Santa Clara Vanguard show from 1996.

## WATERPHONE

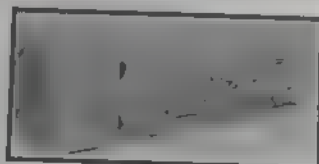
You've probably heard the waterphone in movie soundtracks, but might not stumble onto one at your local music store. Sometimes compared to the cry of a whale, the waterphone consists of an enclosed bowl-shaped chamber, with metallic rods of different lengths welded to the rim. Most often a violin bow is used on the rods to create the haunting sound. If you listen closely, you'll hear an example of this in Scotty Sells' pit arrangements for the Santa Clara Vanguard in 1993.

## WHISTLES

Whistles are often added to provide comic relief, but they can also provide interesting colors to most types of contemporary music (in particular, police whistles and slide whistles). Also, see the samba whistle on page 69. Remember to **support your air** just as a wind player would!



**BIRD WHISTLES:**  
*Nightingale Whistle, Duck Call.*



*Train Whistle*



*ACME siren, slide whistle*

## WIND CHIMES

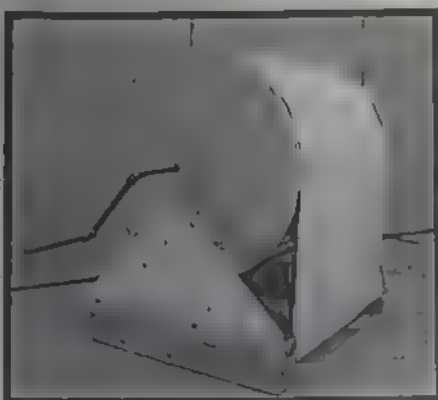
Unlike the mark tree (page 47), wind chimes are usually hung in a circular frame and in a random order. Think of "wind chimes" as what you'd hang on your porch, whereas a "mark tree" is the more commonly used instrument in band settings. Wind chimes create a soothing and continuous sound. All of the models pictured here sound great indoors and out.

**DIFFERENT VARIETIES OF WIND CHIMES:** metal bar wind chimes (solid or hollow), bamboo wind chimes, glass or ceramic wind chimes (not pictured).





photo courtesy Rob Graff



## WIND MACHINE

A wind machine is an unusual contraption. It has a cylindrical spool with wooden blades and draped over the top of this cylinder is a heavy piece of canvas. When the spool is cranked by a handle, the blades rub against the canvas and this friction results in a "wind" effect. There is a great wind machine part in the last movement of Grofé's "Grand Canyon Suite."

## World Percussion Instruments

You don't have to be world percussion expert to add the following instruments to your pit. You should, however, try to learn enough about these instruments to feel comfortable teaching or performing on them. Our hope is to familiarize you with the instruments and discuss their application. Discussing technique on each of these instruments could fill another 5 books! Fortunately for all of us, there are literally hundreds of instructional videos available today. Start by checking out the Steve Weiss or Lone Star Percussion catalogs.

All of the following instruments are associated with one or more traditional styles of music. Besides the music that these instruments are usually associated with, there are also **non-traditional applications**. Sometimes it's all about getting a specific sound into your musical score. You don't have to play samba music to apply the powerful sounds of surdos, or African music to use a talking drum. Be creative and let your own good taste guide you.

## Hand Drums

### CONGAS



Congas are an essential part of Afro-Cuban music as well as many other styles of Latin music. The drums come in **three sizes**: (from smallest to largest) quinto, conga, and tumba. The shells are made of either wood or fiberglass, and the **heads** are made from skin (calf, mule, or water buffalo) or are synthetic. Maintaining skin heads outdoors can be very difficult. This is why most marching bands and drum corps prefer synthetic heads (made by Remo or Evans). For outdoor use, it will also be important to invest in good quality **stands** for the drums. This will allow for maximum tone and projection.

For non-traditional applications, you can play congas with virtually any kind of stick or mallet to achieve your desired sound. In fact some mallet companies, like Vic Firth, have created mallets specifically for this. Though, traditionally, these drums are played with hands.

When playing the conga with your hands, remember that the strokes should be initiated from the wrist. Many young hand drummers will make the mistake of playing the drums with a lot of arm motion. This can cause *severe damage* to your wrists and hands. Realize that even with good technique it will take a while to develop calluses and to play "pain free."

Here are a few sounds that all hand drummers should be able to create on their drums:

### Open tones

Strike the edge of the drum with the base of the fingers (where the fingers meet the palm) and allow the fingers to relax and hit the drum. This should be a smooth and rebounded stroke. Remember to play from the wrist. This technique should produce a good mix of overtones from the drum (highs and lows).



For open tones, relax fingers and let them rebound off the head.

### Muffled tones

Use the same stroke style, just don't rebound off the head. The stroke should still be relaxed and smooth.



For muffled tones, fingers don't rebound from head.

### Heel and Tip

This is usually a time-keeping device. These are usually muffled sounds and are not that loud. For heel sounds, strike the drum with the heel of the hand, for tip sounds use all of your fingertips. Try rocking back and forth between the heel and tip sounds.



Heel stroke.

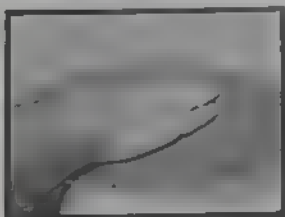


Tip (toe) stroke.



### Slaps

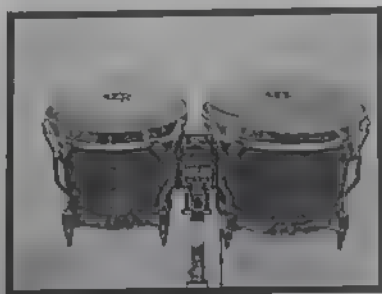
These can be muffled or open and are the hardest sounds to achieve. Use a stroke similar to the open tone, but slightly grab at the center of the head with your fingertips. Be patient, this one takes a while to play consistently. A good slap sound is bright and high-pitched. This has nothing to do with volume. A great hand drummer can play slaps at all dynamics.



Bass tone with the palm.

### Bass tones

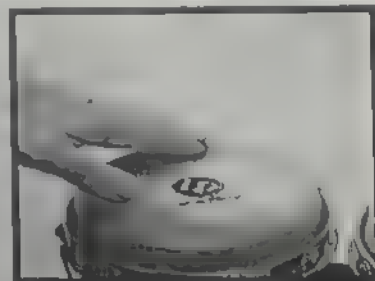
Strike the center of the head with a relaxed, flat palm. This should achieve a mellow, bass sound.



### BONGOS

There is a large amount of contemporary music that requires the percussionist to play bongos with **sticks**. For this type of work you may want to use synthetic heads, or even a small set of concert toms (6" and 8"). Again, some stick manufacturers have come up with mallets just for bongos.

Using your **hands and fingers** you can create similar sounds to those created on conga (open tones, muffled tones, heel, tip, and slaps). The only difference is you will use less of your hand to do it. Since the heads are much smaller you can create great sounds using just your finger tips. You would be surprised how well bongos played with fingers can cut through a band or corps, especially for softer pieces and ballads.



Djembe mounted on a stand

### DOUMBEC AND DJEMBE

Though these drums have different origins (the doumbec is Middle Eastern and the Djembe, African) and are used for different styles of music, they share many similar qualities. Due to their shape, these drums create powerful **bass tones** and crackling **slaps**. Authentic versions of these drums are easy to find in music stores, but may be more difficult to maintain outdoors. Remo makes very affordable versions of these drums with synthetic shells and heads. Again, you will need a **stand** specifically designed for each instrument to take advantage of the tone and sustain. These drums are capable of generating a lot of sound and excitement outside. Check out the closing production of the Santa Clara Vanguard's 2001 show for some djembe action.

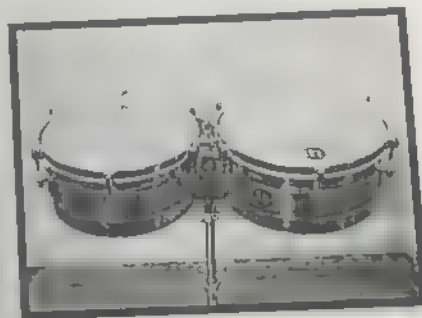
## Other World Percussion Instruments

### TALKING DRUM

The talking drum, or kalengo, is another unique instrument from Africa. The head tension can be adjusted *while* you're playing by looping a thumb around the ropes, or straps, and pulling on them. Using this technique you can produce a multitude of pitches and interesting pitch bends, simulating speech (hence, the name). Most talking drums come with a special hooked mallet.

### TIMBALES

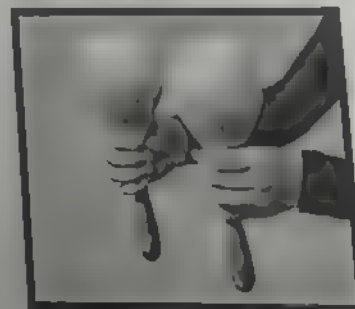
Timbales are another instrument for which it is highly recommend to buy a video or method book. This will allow you to get into the immense amount of detail that *this* book won't allow. You can start with Changuito's book, *A Master's Approach to Timbales*, and by buying every Tito Puente cd you can find! This is a solo instrument with a very rich history, so you'll want to make sure you're doing it right.



Timbales are traditionally a set of 13" and 14" or 14" and 15" metal-shelled drums. For outdoors, plastic, single-ply heads are recommended and remember to use **timbale sticks**, not drum sticks. Timbale sticks are thin, untapered sticks that bring out the attack and high tones of the drums. Often groups **tune** the drums too high. Again, by listening to great players you'll hear that the drums are usually tuned at a medium tension with an interval of a fourth or fifth between them. Adding a solid **stand**, a **cowbell** or **woodblock**, and a thin, quick, **crash cymbal** will complete the look. When writing for this instrument, keep in mind the rhythmic activity of the *entire* ensemble. It's very easy to overwrite for timbales, especially during the *groove* sections. Experiment with creating *conversations* between the timbale player and the marching tenors. Check out the 1997 and 1998 Crossmen shows for a taste of this writing style.

### MARACAS

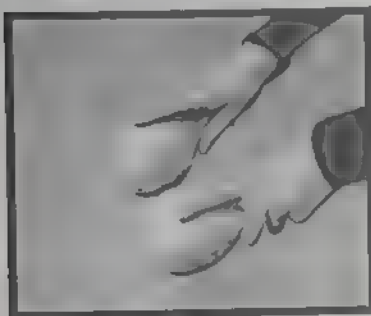
Maracas are another Latin instrument that have found their way into contemporary wind and percussion literature. There are a great variety of instruments. Like the shaker, the sound depends on what the chamber is made of (wood or plastic) as well as the material inside the chamber. Most varieties of maracas work well outside.



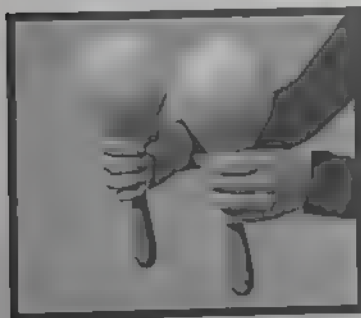


### A few notes on playing maracas:

There are a multitude of techniques for general playing and several effects that can be achieved with some practice. If you hold the maracas **perpendicular to the ground** and play them with a quick wrist flick, you'll create two attack sounds (as the beads hit each side of the chamber). This can be good for general purpose playing. For more volume you can hold two maracas in each hand.



For softer playing, hold the maracas **parallel to the ground**, with the finger tips on the chamber. With a controlled wrist flick, you can get a soft, single attack sound.



Another **traditional style of playing** is to hold the maracas perpendicular to the ground and lift them up and down as if they were on pulleys. This takes advantage of the double attack sound and creates an interesting, continuous rhythmic sound. Here's a rhythm to experiment with this sound.



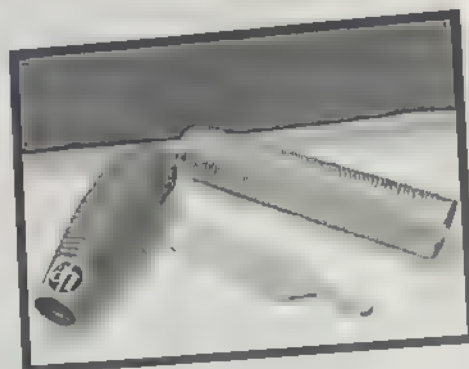
For a "swirling" roll sound, as in John Barnes Chance's *Incantation and Dance*, hold the maracas perpendicular to the ground with the chamber facing down. Now swirl them as if you were stirring a bowl of soup. Again, for more volume, add more maracas.

Another important aspect to keep in mind when playing maracas is the delay in sound. The delay is even worse than the tambourine! Combined with the "double attack" this can make maracas a very demanding instrument to play. Make sure the performer stays on top of the pulse!

## GUIRO

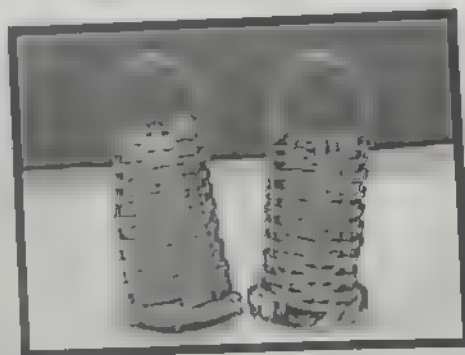
The guiro is traditionally constructed from a gourd or hollowed piece of wood. Another close relative, the **merengue guira**, is made from metal (you will find that this instrument "cuts" well outside). There are a number of elements, besides the material it is constructed from, that will effect the sound of your guiro: how many notches are carved into the instruments, how close are they, and how deep are they carved? Also, what are you using to **scrape the instrument**? A **metal hair pick** (pictured), a piece of **rattan** (i.e. shaft of a vibe mallet), a **plastic comb**?

All of these items work nicely, depending on the sound you want to achieve. The sound is also affected by the speed, length, playing zone, and pressure of the scraping stroke. Besides scraping sounds, **tapping** sounds are created by simply striking the guiro with the pick or comb. Listen to some recordings of experienced players and experiment!



## CAIXIXI

The caxixi (pronounced kah-she-she) is a small basket-style shaker. They have a very **delicate sound**, so this is not the shaker that will "drive" the ensemble. They are best used in thinly scored sections, when their unique sound can be heard. Caxixi are often associated with the popular Brazilian instrument, the berimbau (not an instrument you'll often find on the football field at half time).

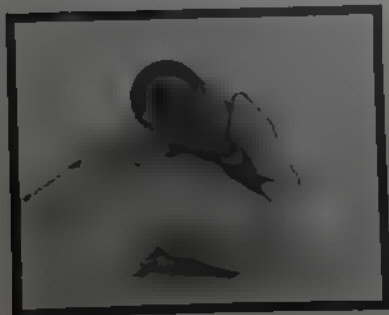
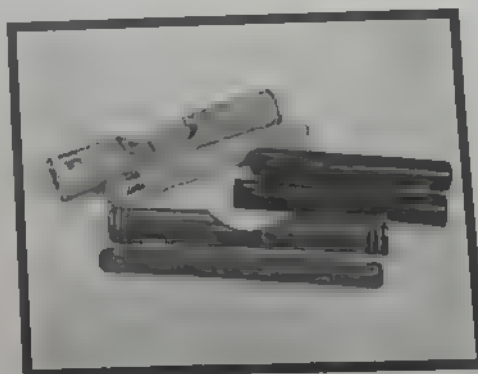


## CLAVES

Claves are the backbone for most Latin styles of music. Make sure your best time-keepers are playing the claves! Most schools typically have a set of **hardwood claves** (rosewood or ebony) or their **synthetic** counterpart (note: LP's King Klave is one of the loudest instruments known to man). You may

also come across a set of **African**

**claves**. These consist of a solid stick, for striking, and a hollowed-out, cut-away clave, the target. African claves have a beautiful, mellow sound. This can be a nice alternative in some situations. As for playing this instrument, the hand that is holding the "target" clave must act as a resonating chamber. This is especially important with African claves. To do this, hold the clave between your finger tips and the heel of your hand. Strike the target clave in the middle.



Proper grip for claves.

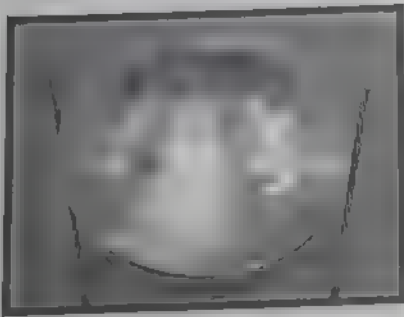


### CUICA



This Brazilian goodie is another friction drum, related to the lion's roar. Cuicas are usually smaller, metal-shelled drums. Attached to the single head is a stick. To achieve a sound, the player rubs the stick with a damp cloth. With their free hand they can gently place their fingers on certain areas of the vibrating head to change the pitch and timbre. This is truly a unique sound and a must for samba music! These instruments are quite fragile and should be handled with care.

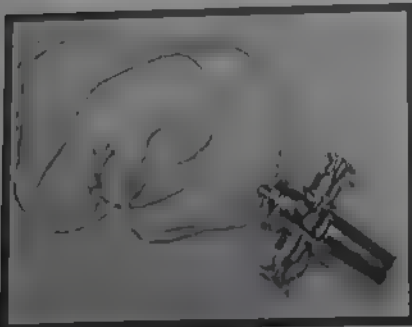
### STEEL DRUMS (a.k.a. Steel Pans)



Steel pans are one of the more recent inventions of the percussion family, and originate from Trinidad. They can add flavor and mood to an ensemble like no other instrument. If you are interested in soca, calypso, or reggae music you may want to look into incorporating this sound. There are a variety of different steel drum voices, all of which comprise the "steel orchestra."

The unfortunate downfall to this instrument is that they are expensive and they need to be periodically tuned by a **professional tuner**. Before you invest, make sure there is a qualified tuner in your area. Do not attempt to tune a pan yourself! To keep your pans in tune for longer, always play with a **light touch**. You will also need **cases** for the instruments as well as **mallets** specifically designed for each size pan. The upside is that while this instrument may be outside of your budget, it is easily recreated on a **synthesizer** or **sampler**. (The authors apologize to the pan-purists out there).

### SAMBA WHISTLE



This is another one of the essential elements of Brazilian Carnival music. These whistles are similar in sound to a police whistle, though a bit mellower, and usually have two or three pitches.

## SHEKERE

The shekere hails from Africa. Traditionally, this is a hollowed gourd with rattles attached to the outside. Many sounds can be achieved with this instrument by shaking and tapping the loose beads. Specialty shops

will sell you a traditional gourd instrument, though now it's quite easy to find a good sounding **synthetic** version. LP makes a great synthetic shekere (pictured here).



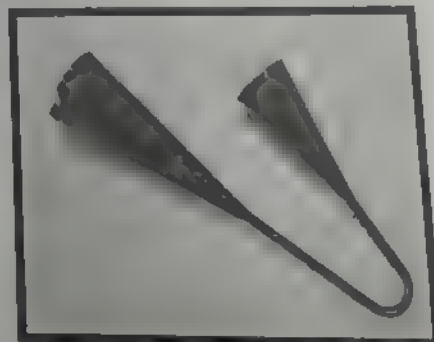
*The shekere will also produce a nice **bass-tone** if you strike the bottom of the gourd on the heel of your hand.*

## SURDO

The surdo is essentially the bass voice of traditional Brazilian Carnaval music. These are large two-headed drums worn with slings, resembling over-grown tenor drums. They are traditionally played with one hand and rhythmically **dampened** with the other. By mixing different sized drums, you can create the interesting bass lines which are inherent to samba music. Today, you will often see marching groups use these drums in non-traditional ways: using two mallets and creating big "drumming," or "impact" moments.

## AGOGO BELLS

These cone-shaped bells have their roots in African music and have found their way into many popular forms of Latin music. They are often used as a time-keeping instrument, so make sure a "rhythmically stable" person is playing them. Try playing the agogo bells with a thin stick (a timbale stick or rattan handle), rather than a drum stick. This will help to produce the **resonant tone** they are known for.





## Electronics

Marching band in the modern age – electronics on the field. These days it's common to see marching bands with full-scale electronics setups in the pit. Sometimes this is used merely to amplify the pit's acoustic instruments. Other times, it involves electronic instruments, triggers, and wireless technology. When done well, electronics can be a great enhancement to your overall musical sound. When done poorly...well, it's "poor" to say the least. This subject alone could be the topic for an entirely different book, but we'll try to introduce a few of the basics to help you decide how you might *electrify* your own front ensemble.

### MICROPHONES

In order to amplify your pit instruments, you'll need decent microphones to pick up the sound. First, we should mention that there is a huge variety of microphones to choose from, many of which are quite expensive. This doesn't mean you need to kill your budget on mics before you even consider purchasing speakers! Just avoid buying cheap, consumer store microphones because you'll kick yourself later.

The two most common types of mics are **dynamic microphones** and **condenser microphones**. There are many technical differences between the two, but we won't get into that here. The main thing to realize is that condenser mics require a source of power in order to work – either from a battery, or by using **phantom power**. Phantom power comes from a mixer and travels through the XLR cable which connects the mixer to the microphone. These can be great for certain situations, but it is less complicated to use a decent collection of dynamic microphones for a marching ensemble. Dynamic microphones create their audio signal from a dense series of coils, and don't require a power source. Just plug 'em in and go!

Microphones also have different pickup patterns (sometimes called "polar patterns") which will affect what they react to. **Omnidirectional mics** will pick up sound from all directions (in front, on the sides, and behind the mic). **Cardioid microphones** will pickup sound mainly from the front of the mic. For this reason, they also reduce the chance of feedback and are very popular for stage use. There are other types of pickup patterns, but we won't confuse matters at this point.

**For amplifying percussion instruments, a good general use microphone is the Shure SM57.** They only cost about \$79 each, and are a mainstay in studios across the world. Another option to consider are the more directional, "hypercardioid" patterns found in the **D-series mics by Audix**. For general purposes, it's probably best to avoid wireless mics which may receive interference from other sources. Also, consider placing your mics above the mallet keyboards (but not too high) since the most resonant sound of the instrument comes from the TOP of the resonator tubes.

## SPEAKERS

Now that you're mic'd, you need to be heard, right? This will require a speaker system. A good set of speakers will certainly help your cause. It's important to understand that you can't just mic all your pit instruments, then run the sound through a guitar or bass amp. Due to the limited frequency response of these types of amps, it would end up sounding worse.

What you'll want to get is "powered" (or active) speakers instead of speakers that require an amplifier (also known as "passive" speakers). A separate amplifier is just one more thing to worry about, and it introduces more noise into the signal chain. Ideally, you should look for **"self-powered" monitors**. A few models to look into are the Mackie SRM1530's or SRM450's, JBL EON15 G2, or EV SX100+.

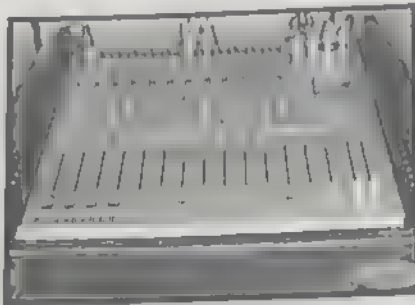
## POWER SUPPLY

All this electronic gear will need to be plugged in. Well, the stadium will have an electrical outlet, right? Maybe. Maybe it's there, but it doesn't work. Or maybe you have to use such a long extension cord that you end up with that "hum sound," also known as a ground loop. The best advice when supplying power to your electrified pit is to cover all your bases by supplying your own power.

The obvious choice might be to buy a generator, but unfortunately generators are noisy, and that's the last thing you want to introduce into a musical environment. Instead, consider the option of purchasing a nice, quiet, portable power supply - **battery power**. Mobile battery packs are readily available from McCormick's marching band supply, and will offer an effective way to power your setup for performances. Due to the limited length of battery time, you may find it more beneficial to "plug in" for long rehearsal days, saving your battery power for performances. On a full charge, these battery packs should last about 3 hours.

Another valuable consideration would be to purchase a **power conditioner** to reduce noise, and eliminate the danger of electrical spikes and surges. With all this expensive equipment, this is a good (and minimal) investment to make. The Furman PL-8 is a good model to check out. It goes in your rack and contains 8 power inputs and some nifty, slide-out tube lights to illuminate your rack components, all for about \$99.





*This is a Soundcraft Spirit E12, 12-channel mixer. Larger ensembles may need a 16-channel mixer.*

## MIXING BOARD

The mixing console is the "grand central station" of all your electronic and amplified devices. It controls the main volume output of *all* instruments, as well as the signal volume of each *individual* instrument. Here is where you can really **balance the mix** to your liking. In addition, most mixing boards allow you to adjust the equalization of each input (treble, bass), as well as any effects processing that may be connected (such as reverb). This is the "last stop" before the audio signals are sent to the speakers for your audience to hear.

Mixers come in a variety of configurations. The type of mixer you buy will largely depend on how many channels you want to run, and whether you want to process mono or stereo channels (or most likely a combination of both). If you are connecting stereo devices (samplers, keyboards, other sound modules, etc.) into mono mixer channels, it's important to reserve *two* mono channels for each stereo device. Each microphone in your setup will typically only need one mono channel. Be sure there are enough XLR inputs on your mixer if this is how you intend to connect your microphones. Some mixers only contain a limited number of XLR inputs (like Mackie's 1202-VLZ which is a 12-channel mixer, but only contains 4 XLR mic inputs).

Mackie is well-known for their mixing boards, and you can get a good, low-cost choice with their 1202-VLZ or 1402-VLZ models. Another option would be to check out the Soundcraft Spirit E series, or Yamaha mixers. When shopping for a mixer realize it may be worth some extra expense for added flexibility in the future. Your mixer will be one of the most important elements of your setup.



*In this rack configuration, you see the Akai Z8 sampler, Lexicon MPX-200 effects processor, and BBE 882 Sonic Maximizer.*

## SOUND MODULES/SAMPLERS

Now that you have the ability to amplify acoustic instruments, what about electronic sounds? This is where your **sound sources** come in. Oftentimes, electronic keyboards will come with a slew of on-board sounds – thus making it a "**sound module**." You can also purchase separate modules (usually mountable in a rack configuration without a keyboard) which will offer you more sounds to choose from. Many of these modules are expandable by adding cards containing even more sounds. **MIDI** (Musical Instrument Digital Interface) will allow all of your modules and controllers (page 74) to communicate, share, and layer sounds. As you can see, the possibilities are endless.

When purchasing a sound module, it's helpful to understand the difference between synthesized sounds and sampled sounds. **Synthesized sounds** are created by a series of electric signals. These synthetic sounds can either *resemble* an acoustic sound, or you can create your own sounds. You're limited only by your imagination. Synthesizers are commonly seen with a built-in keyboard that accesses the sounds from its on board memory.

**Sampled sounds**, on the other hand, are created from actual *recordings* of live sounds. These sounds are sometimes processed into other sounds electronically, but in this case, we can simply think of them as pure, live recorded sounds that are played back in real time from a **sampler**. The sampler can be a rack-mounted module (like the Akai Z8) controlled by a MIDI controller (such as a DrumKAT, MalletKAT, or MIDI keyboard), or it can also be built into a keyboard (like a Kurzweil K2500). There are also several popular software samplers that can be used on personal computers, and controlled with various MIDI controllers. For our purposes on the field, it's probably best to avoid the software based samplers. It's been done before, but can you imagine lugging a Macintosh onto the football field for sampling? Stick to hardware samplers for the best reliability in this type of venue.

A few sound modules to consider are the Roland XV5050 or the Proteus Virtuoso (both sell for around \$750). The newer Akai Z8 and Z4 samplers are great and hold up to 512 megs of RAM (random access memory) which should be plenty for marching shows. They have internal 60 gigabyte drives for storing all your sounds and they take up to 32 midi channels so you can have two (or more) devices controlling it. Keep in mind that when using samplers, you'll either have to create and edit your sounds, or purchase them in separate sample libraries in a format compatible with your sampler ("Akai format" for example), which is another expense.

## MIDI CONTROLLERS

In order to perform live electronic music, you need an "instrument" to perform on. This is where **MIDI controllers** come into play. The most common form of controller used in the front ensemble is a piano-style keyboard, or a percussion controller such as a DrumKAT or MalletKAT. These controllers will often come with pre-loaded sounds, thus making it an instrument that can produce sound in stand-alone mode. However, you can also use the controller device simply to play sounds from another source, such as a rack mounted sound module.

If you are looking to purchase a **keyboard controller** (with no sounds), check out the Fatar keyboards. You can get these with up to 88 keys, with weighted action to simulate the natural feel of a piano. For **percussion controllers**, try the MalletKAT (by Alternate Mode) which is laid out like a vibraphone, and played with mallets. Similarly, a DrumKAT or TrapKAT can be great for triggering



A common MIDI keyboard controller. This particular keyboard (Kurzweil K2000) comes with a variety of sounds.



other sounds (percussive or otherwise), and each pad can be programmed to trigger different sounds depending on where you strike it, or how hard you strike it. The MalletKAT can be bought with or without sounds. A standard 3-octave instrument can be expanded to 4 or 5. All of these controllers are very flexible in that they can trigger any of the sounds from your other sound modules.

## MONITORS

Monitors aren't absolutely essential with electronics, but depending on your setup, they may help the performer. The main reason to consider monitors is so the players can hear themselves initiate the sound of their instrument. These speakers would not be for the audience to hear. If your outgoing speakers (the ones facing the audience) are too far away from the MIDI players, it can feel a little unnatural to play those instruments with a good sense of musicianship. Most musicians aren't used to hearing the sound of their instrument 20 feet away from where they are playing. Logistically, monitors add a little more chaos to your setup, however it can certainly be beneficial to the performer. Whether or not you use monitors might be a consideration to make once your primary essentials have been covered (mixer, main speakers, mics, rack items, cables).

## CABLES

With an electrified pit, you'll undoubtedly find that your box of "stuff" to wire everything together will grow. Cables can make for much of this "stuff." Some of the main types of cables you'll need (depending on your setup) are:

### XLR Cables



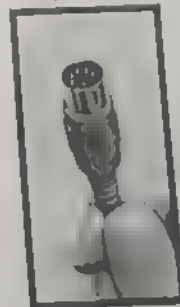
For microphones and some speaker models

### 1/4" Instrument Cables



For instruments, rack components, and speakers

### MIDI Cables



Also known as: well...just MIDI cables

## UP FRONT - Section 1: Instruments of the Pit

You should shop around for cables. Most likely, you'll have to replace some cables from time to time, so find the brand that works best for you. Some good choices are Monstercable, Mogami, or Hosa. Pro C'o makes really good cables that are also affordable. For the best performance, it's a good rule of thumb to buy the largest gauge cables you can afford. The main idea here is just not to get "cheapo" department store type cables. To reiterate a common theme; you get what you pay for.

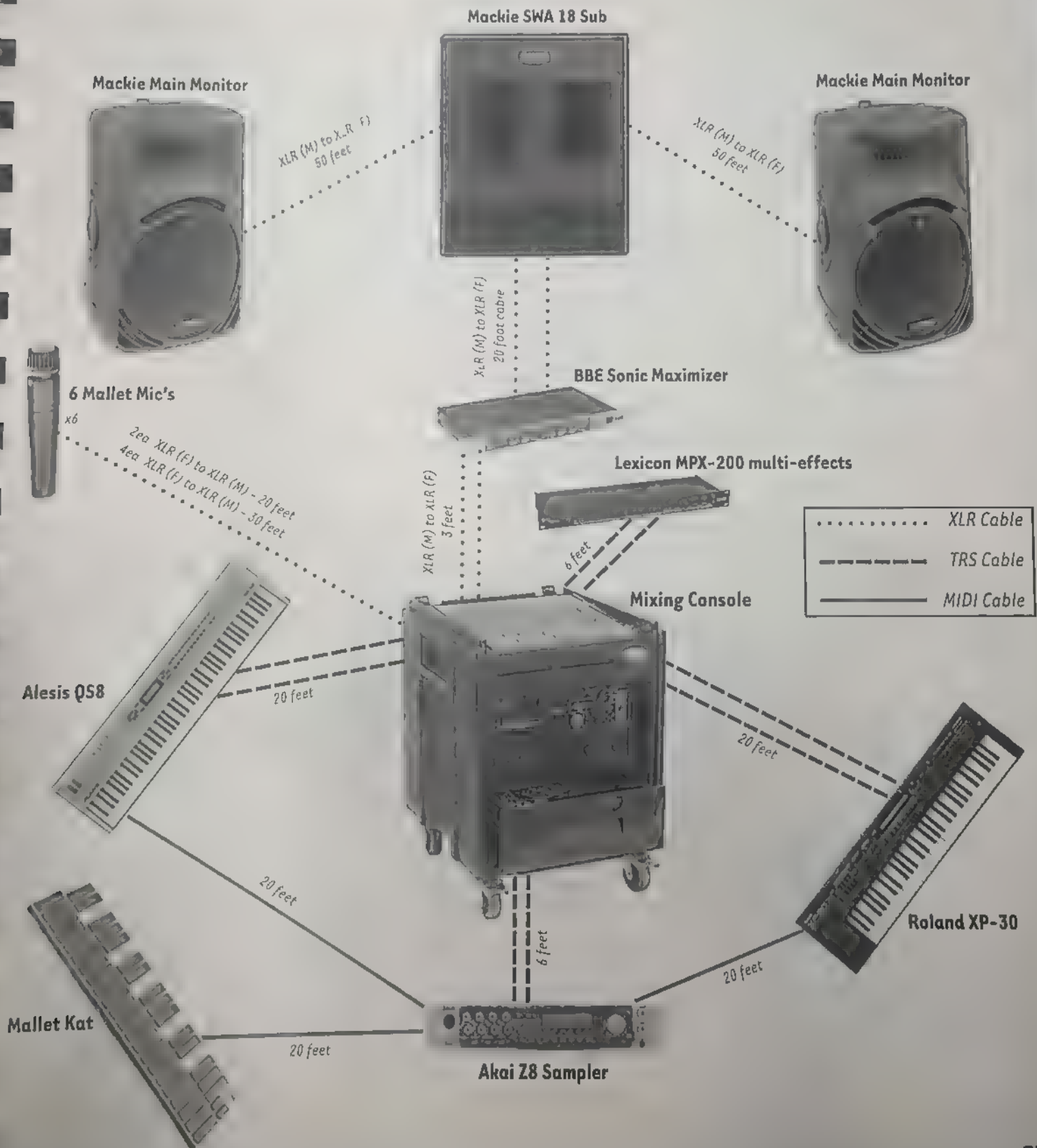
Keeping your cables organized and untangled can be a challenge. Look into ways to keep them neat and organized. Poorly maintained cables are often the cause of nasty, unexpected sounds.

Depending on your setup, you may also find it helpful to consider a **snake**. Basically, a snake is a clean way to get all your inputs from the performers to the mixing console. This is really useful for groups who have the mixing board out in front (away from the band) where someone else (like a staff member) controls the mix. The thing to be careful about with a snake is that it's much more expensive than buying a single mic cable, so you need to be absolutely sure you'll have enough length to reach every mic/instrument in your setup.



## EXAMPLE DIAGRAM FOR CABLE CONNECTIONS

In order to be successful with an electronic setup in the pit, you need to be organized. This example illustrates how percussion instructor Donnie Christian setup the electronics configuration for the Jonesborough High School pit (Jonesborough, Arkansas). In this case, the mixer is stationed within the pit. This type of diagram can also help you organize how many lengths of each type of cable are needed.

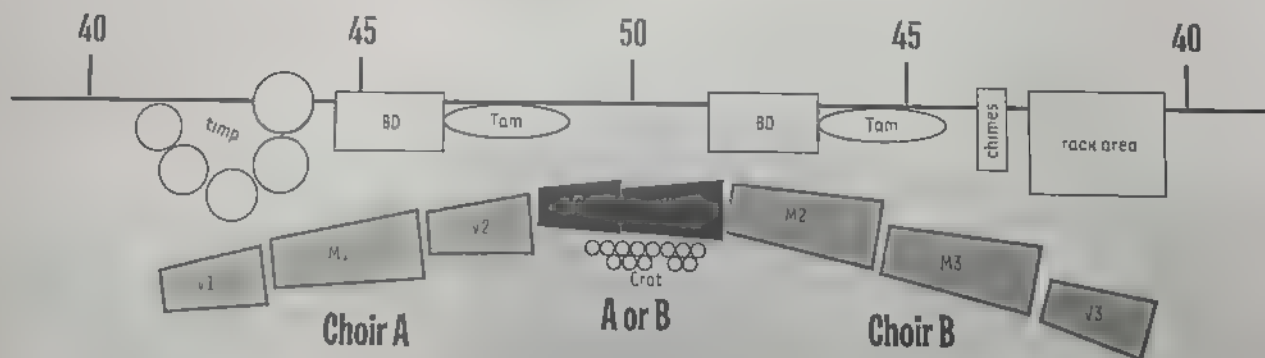


## The pit setup

Now that you have purchased two of each of the instruments mentioned above, it's time to develop a setup. There are two basic thought processes involved with the placement of the instruments on the performing field. One thought is that the musical score and the percussionists' needs will dictate where the equipment is set. This can be a very useful setup process for smaller groups with only a few instruments. A second thought process involves developing the setup first, then writing a score that will take advantage of the placement of the instruments. This takes a bit more planning and thought, but the end results can be very effective. This second process works well for larger groups with several instruments. Below are a few popular setup plans,

### THE KEYBOARD "CHOIR" SETUP

This setup involves grouping one or two of each of the main keyboard instruments into a choir. A large pit could have several choirs within the ensemble. For example, you could have one choir consist of a marimba, a vibraphone, and orchestra bells. The second choir, staged apart from the first choir, could consist of another marimba and vibraphone, and perhaps a xylophone. These two choirs can perform independently, or perhaps "converse" with each other, and since they are close to each other, they can play in unison for tutti sections. This is an extremely versatile setup.



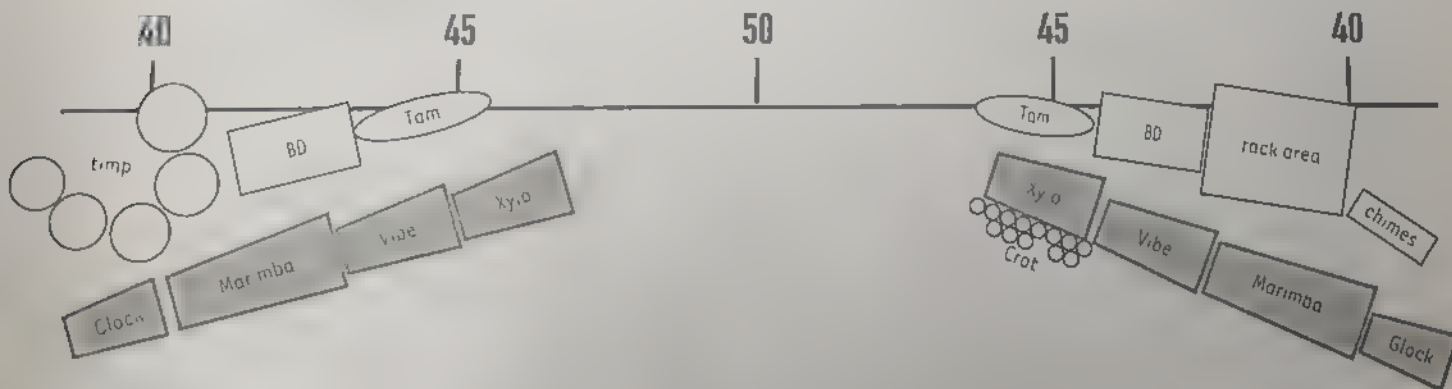
*Example of a keyboard choir style setup*



## ANTIPHONAL SETUPS

Here, the word “antiphonal” is used somewhat loosely. Basically, “antiphonal” refers to splitting up the pit. This could mean simply **dividing the pit** into two halves, or it could also mean having a **mirror-image** layout of your instruments. You could also experiment with having different “stations” in different areas of the field. Be careful with positioning pit **equipment on the field**. If you don’t have sound reinforcement, this will have an extreme effect on the projection of the instruments. Also, since the pit is no longer on the front sideline, they will have to watch the drum major, like the marching members. This is very difficult to do on percussion keyboard instruments which require sight for pitch accuracy. Make sure to set aside extra full-ensemble rehearsal time to address all of these timing and balance issues.

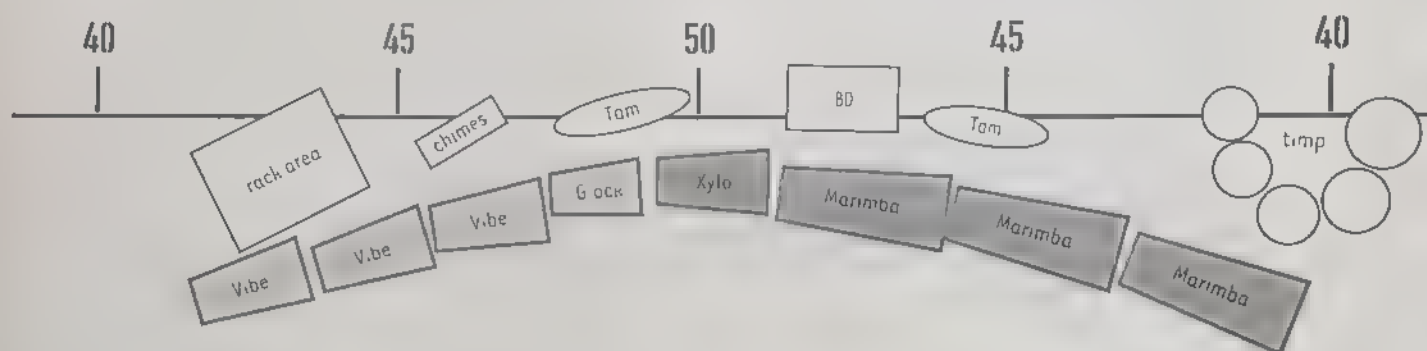
Antiphonal setups can help you to create wonderful effects such as “stereo” conversations between the different groups, separation of sound, and powerful tutti impacts. For a good example of this, listen to Star of Indiana’s pits from the early 90’s (1991, 1992, and 1993).



*Example of an antiphonal style setup*

## WOOD VS. METAL SETUPS

In a wood vs. metal setup, the wood keyboards are grouped as a unit, and the metal keyboards are grouped as a separate unit. Though somewhat more limited in terms of creating composite blends of sound color, you can achieve a good separation in the different sound qualities. Listen to the Crossmen in 1997 or 1998 for some samples of this style of setup.

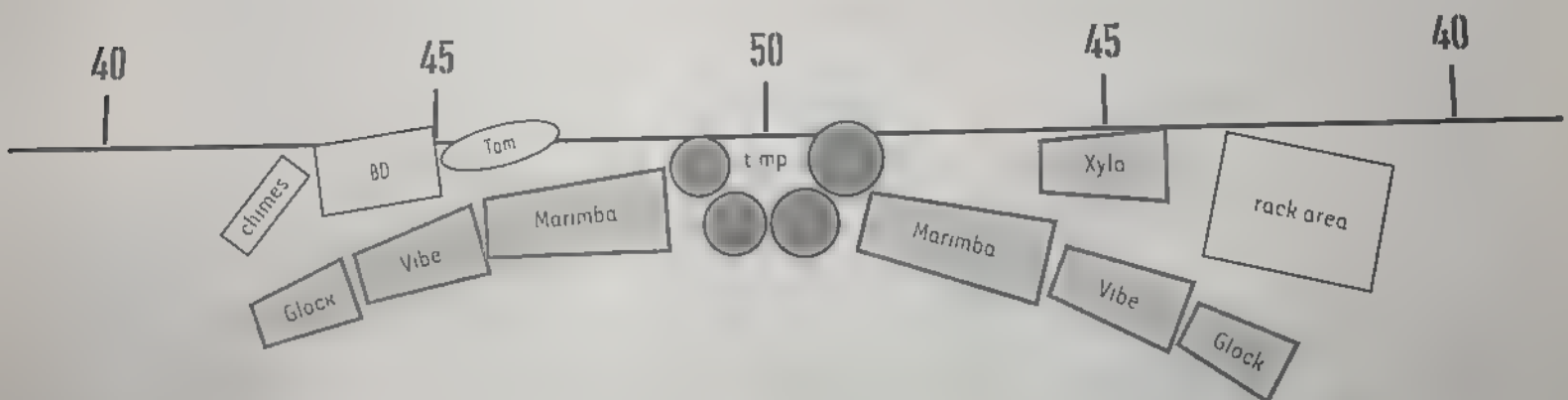


*Example of a wood vs. metal setup.*



## TIMPANI-IN-THE-MIDDLE SETUP

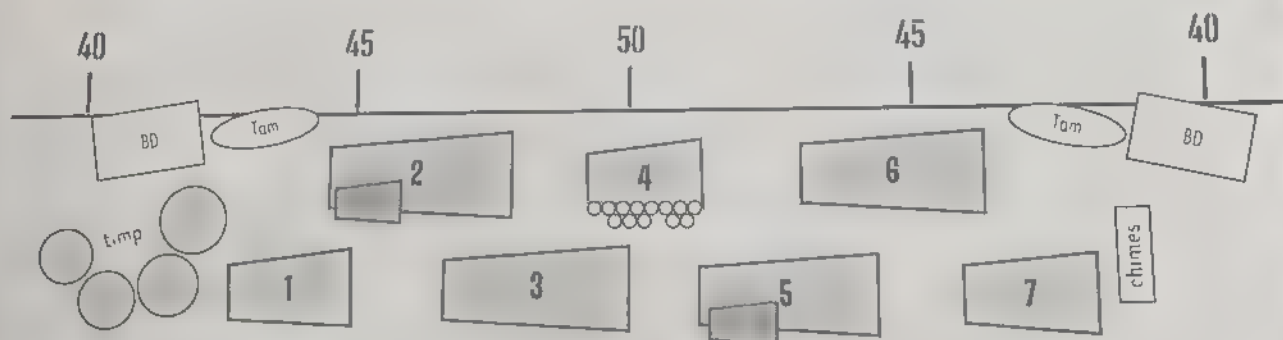
This setup puts the timpanist in the spotlight – smack-dab in the middle of the ensemble with everyone else revolving around him or her. It's a timpanist's dream! It can also be a very "showy" setup that exploits the physical nature of the timpanist. Beware, as this type of setup is probably the least effective in terms of **ensemble unity**. First of all, it will physically separate your keyboard players, and it will place an enormous "wall of sound" between the two sides of the pit. This can create a tough listening environment for all players in the pit, *including* the timpanist. This setup works well with a very experienced timpanist, surrounded by very confident ensemble players.



*Example of a timpani-in-the-middle setup*

## MULTI-PERCUSSION "POD" STYLE SETUPS

Developed by the Cavaliers in the late 1980's and early 90's, this concept has come a long way, and can be very effective if you have the right equipment. Essentially, each individual performs at his or her own **station** consisting of a multiple-percussion setup. Given the fact that multiple-percussion literature is growing at a fast rate, students are quite adept at dealing with this style of playing. In fact, many players may prefer this style of setup since their own station essentially becomes "their instrument." In order to create these pods, it is important to have the right equipment. Many companies are now offering keyboard frames which will accommodate additional accessory instruments, drums, extra keyboards such as bells or piccolo xylophones, cymbals, and whatever else you can think of. All of this gear can be **clamped onto one rolling frame**. This makes it very convenient to transport the section on and off the field at competitions. The pit crew will love it!



### Legend:

**Pod 1:** Vibes, 16" Sus, 22" China, Triangle, Temp blocks, 20" hand cyms

**Pod 2:** Mar. (4.6), concert toms (10-14"), 18", 20" sus.

**Pod 3:** Mar (4.6), concert toms (15-16"), 6", 8" splash

**Pod 4:** Xylo/Crotales, 14" sus, woodblocks, picc. snare

**Pod 5:** Mar (4.3), picc xylo, 17" sus, brake drums, opera gong

**Pod 6:** Mar (4.3), bells, cowbells, 14" hi-hat

**Pod 7:** Vibes, 18" sus, Almglocken (C-F), 18" hand cyms

*Example of multi-percussion "pod" style setup and instrument palette.*



## Mallet Selection by Jim Casella

Now more than ever, sound quality of the pit ensemble is something that doesn't go unnoticed. **Sound quality** is a result of technique, mallet selection, equipment, and scoring. Let's discuss mallet selection. The fact of the matter is that there's no *one* mallet that will work for every musical application. If you plan on getting the best sound possible throughout your entire show, you must understand that this will entail some mallet changing. This requires an investment in a **variety of mallets**. If you take proper care of your mallets, they will most likely last you a very long time. Today's top mallet manufacturers have created some very durable mallets specifically geared toward the rigorous environment of marching ensembles.

The secrets to a better sound *and* projection are **weight** and **mass**. If you pick up a "field series" mallet you'll be able to tell immediately that it is much heavier than your standard "indoor" mallet. There is a good reason for this...and it's not to build chops. The reason is that by adding more weight and mass to the head of the mallet, the **fundamental tone** is unleashed from the bars to its fullest potential. The fundamental is the purest, most resonant pitch that the bar can produce. This comes from an increased clarity of the lowest series of overtones produced by the bar.

I first started realizing this when **Innovative Percussion** began creating some of the industry's best outdoor keyboard mallets in the early 1990's. They were heavy, but they sounded great and were very durable. At that time, Scotty Sells was arranging for the Santa Clara Vanguard pit, and I spent a good deal of time listening to his arrangements while I was arranging for the Vanguard Cadets (SCV's feeder corps). Scotty's pits were getting some incredible sounds, unlike anything I had ever heard. It was around this time that I noticed that more people were paying attention to achieving a good sound quality in the pit, and this "heavy mallet" idea began to evolve more rapidly. While mallet selection is merely one piece of this evolution, it does make a big difference! Today, more than ever, we have the tools available to achieve a superior sound.

I acknowledge the fact that by using heavier mallets in a marching environment, you could inflict some damage to your bars. Also, some harder mallets have a "bite" to them and with continual playing at high velocities and greater heights, it can cause equipment damage and sound somewhat "tinny." So I frequently like to use mallets that take that "edge" off by having **latex wrapped cores**, or perhaps a wrap that is slightly denser. Basically, taking away that "bite" gives us a **better sound**. For this reason, I'm more prone to choose a "hard" mallet outdoors that is a little *softer* and *heavier* than a "hard" mallet that I'd use in the concert hall. Which brings us to the next topic...

### **HARDER doesn't necessarily mean LOUDER.**

We've all heard the common complaint that, "the mallet instruments just aren't projecting to the box. The pit needs to be louder!" Fortunately (or unfortunately!), this is a very common problem with a pit that is not amplified. It is often the misguided solution to switch to a harder mallet in order to get more volume. This doesn't necessarily make the keyboards louder. It just makes them more articulate and oftentimes more 'brittle' sounding. I should mention that when this practice is employed frequently, it may also result in bars that are beaten out of tune or cracked. For other ideas on getting your pit to project, see "Standing in the Press Box" on page 174.

### **Obvious Mallet Selection Etiquette Quote**

*If the mallet head is harder than the surface it is striking, you probably have a mallet selection problem.*

Does this mean that your pit must always play with heavy, soft mallets, or mallets that have latex wrapped cores? Of course not. As with any musical situation, your mallet needs should be determined by the music. One important concept to remember is that the **sound quality can be altered** simply by changing one's "**touch**" on the instrument. With any mallet, you can achieve a wide variety of inflections. For example, with a tighter grip and more pointed stroke, the sound can be made more articulate or staccato. With a more fluid stroke, and looser grip, you can get a warmer, more legato sound. Varying the velocity of your stroke can do amazing things to alter the sound as well. Even though your choice of mallet will greatly affect how well you achieve your desired musical goals, **technique plays just as important a role** in determining the sound quality produced. For more on "touch" see page 109.

### **A Myth From The Mallet Selection Gremlins...**

*"Marimba mallets have birch shafts with yarn.  
Vibraphone mallets have rattan shafts with cord."*

Somewhere along the way, people have been conditioned to think that the above statement is some sort of mallet law. It's simply not the case. It's OK to use a cord mallet on marimba. It's also OK to play vibraphone with mallets that have birch shafts. While many marimba specialists may prefer birch, and vibists may prefer rattan, it's merely a matter of what you are comfortable with, and what you think sounds best. Cord, birch, rattan, and yarn are just materials that make up a mallet. That is all.

### **Blend**

One of the most important things to consider when choosing mallets is **how they interact and blend** with each other. Frequently, I'll love the sound of a mallet when played solo, but when the rest of the ensemble is added in, it may not sound as I had hoped. With this in mind, assigning mallet choices for an entire show can be an ever-changing, and experimental process. Have patience, and make sure your students understand the value in doing this.



Here are a few ideas to consider

**A - listen for individuals sticking out**

When you are looking for a well-blended sound, try to hear if any instruments are standing out in the "mix" more than others. This is frequently a problem between xylophone and marimba. It is also very common for bells to pierce through the mix of the pit ensemble. If this is not to your liking, make adjustments to technique, scoring, and quite possibly mallet selection.

**B - differentiate timbres**

Sometimes you may want a different "mix" of sounds. Perhaps you'd like a fairly articulate vibe sound, but a warm sustained sound in the marimbas. The mallets used on vibes will need to produce a brighter sound than the marimbas, so it's OK if those players are using different mallets to achieve this effect. Music frequently calls for different elements to stand out above others, so this is not an uncommon scenario.

**C - mix warm and bright colors**

To achieve a nice blend of tone and articulation it is not uncommon to have duplicate instruments using different mallets. For example, have one vibe player use soft mallets to achieve a "warm, blurred" sound and have the second vibe player use a medium-hard mallet to achieve an articulate and focused sound. This can be a nice effect, especially if the instruments are in close proximity to each other.

**D - graduating mallets with individuals**

Sometimes a single performer will need a "tapered" set of mallets. Perhaps a marimba player will have one soft mallet for bass register notes, two medium mallets for the middle, and a hard mallet for effects in the top register. Though this may limit what they can achieve in certain phrases, tapered sets of mallets can produce some wonderful effects. Keep this in mind when arranging.

On the next page is a chart of some of my favorite **Innovative Percussion keyboard mallets** we've used with the Santa Clara Vanguard Front Ensemble over the years. Granted, they are not all "outdoor" mallets, and we don't always use them for their labeled purpose. They have proven, however, to be invaluable tools in creating great sounds from our pit. This chart does not suggest that you should use ALL of these mallets. These are simply the ones that I find have worked best for a wide variety of musical applications in recent drum corps seasons.

## Chart of recommended keyboard mallets

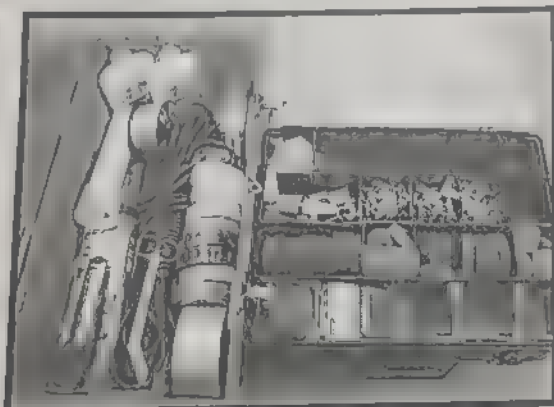
* denotes best for general purpose playing.				
MODEL	SERIES	SHAFT/ HEAD MATERIAL	COLOR	RECOMMENDED USE
<b>MARIMBA (Listed from softest to hardest)</b>				
IP703	Robin Engelman Ensemble Series	Rattan/Yarn	Grey/Tan	Rich, lower chords. Independent rolls. Arpeggiated passages in lower/middle range.
IP1001	Jim Casella Indoor/Outdoor Series	Birch/Yarn	Antique White	Lush, warm chordal material in lower range.
IP150	Field Series	Birch/Yarn	Gray	Great for middle/lower end playing that requires less brightness.
IP1002	Jim Casella Indoor/Outdoor Series	Birch/Yarn	Antique White	General purpose playing. Works well when different touch for different sound qualities is required.
IP1003*	Jim Casella Indoor/Outdoor Series	Birch/Yarn	Antique White	Great for most general purpose playing. Articulate with just a bit less "bite."
FS250	Field Series	Birch/Yarn	Gray	Very articulate/staccato. Best in upper middle range.
IP801	James Ross Concert Series	Rattan/Rubber	Beige	Uncovered mallet. Works well for bright/staccato material in upper/middle range. Avoid lower range.
<b>VIBRAPHONE (Listed from softest to hardest)</b>				
IP1004	Jim Casella Indoor/Outdoor Series	Rattan/Multi-ply cord	Forest Green	For soft, lush material. Minimal attack works for "synthy," washy effect.
IP1005	Jim Casella Indoor/Outdoor Series	Rattan/Multi-ply cord	Forest Green	Very Warm, but with more articulation than IP1004. Good in all ranges.
IP1006*	Jim Casella Indoor/Outdoor Series	Rattan/Multi-ply cord	Forest Green	The best for general purpose playing. Fairly articulate, but not too bright unless played with very staccato touch.
FS420	Field Series	Rattan/Cord	Maroon	Bright and articulate. Good projection.
<b>XYLOPHONE (Listed from softest to hardest)</b>				
FS350R	Field Series	Rattan/Rubber	Black	Soft xylophone sounds. Blends well w/marimba sounds. Conceals xylophone brightness.
IP1007	Jim Casella Indoor/Outdoor Series	Rattan/Plastic	Burgundy	Blends well with marimbas w/o sounding too bright. Maintains xylophone clarity with warmth.
IP803	James Ross Concert Series	Rattan/Plastic	White	Good projection with warm xylo sound. Slightly more weight and articulation than IP1007.
FS550R	Field Series	Rattan/Plastic	Black	Good, characteristically bright xylophone sound. Projects well with very sharp articulation.
<b>GLOCKENSPIEL (Listed from softest to hardest)</b>				
IP903	James Ross Concert Series	Rattan/Plastic	White	Good to use for limited, non-rapid passages when a softer sound is desired.
FS550R	Field Series	Rattan/Plastic	Black	Good clarity to sound. Clear, characteristic glock sound. Full sound
FS650R*	Field Series	Rattan/Plastic	White	Like 550R, but with slightly thinner sound. Higher overtones.
IP908	James Ross Concert Series	Rattan/Brass	Brass	Extremely bright for metallic, bright sounds.
<b>CROTALS (Listed from softest to hardest)</b>				
FS350R	Field Series	Rattan/Rubber	Black	Good for blending soft crotale color with other instruments. Creates little attack, but good sustain.
FS650R*	Field Series	Rattan/Rubber	White	Good for general crotale use. Bright, articulate.
ENS780R	Ensemble Series	Rattan/ Aluminium	Aluminium	Very bright with a thin, pointed sound.

Mallets listed are by Innovative Percussion. For more information visit [www.innovativepercussion.com](http://www.innovativepercussion.com)



## Instrument care and maintenance

Care and maintenance of your expensive pit instruments should be a daily concern. Instruments should be checked and cared for before and after every rehearsal. **Preventative maintenance** can save you thousands of dollars in the long run. Here are a few tips to get you started. Make sure every pit member and pit crew member is familiar with this information. You may want to create your own information packet to hand out to each person involved with the process.



*A well-organized pit "maintenance" box can really make a huge difference in handling common equipment dilemmas*

### "PIT MAINTENANCE BOX"

This is an absolute must! Find an old tool box or tackle box and fill it with everything you'll need in case of a pit emergency. Here is a short list of items to include.

- |                                      |                          |
|--------------------------------------|--------------------------|
| Keyboard cord                        | Drum keys                |
| Tam tam rope                         | Timpani key              |
| Scissors                             | Masking tape             |
| Felt washers for cymbals             | Timpani and bass drum    |
| (all sizes for hi hats and suspended | mallet Replacement felt  |
| cymbals)                             | Bungee cords             |
| Nylon cymbal sleeves                 | A lighter                |
| (surgical tubing)                    | Tuner for timpani        |
| Wing nuts for all stand sizes and    | Metal washers for cymbal |
| Keyboards                            | Stands                   |
| Oil or WD40                          | Screwdrivers             |
| Duct tape                            | Allen wrench set         |
| Fishing line                         | Pliers                   |
|                                      | Teflon tape              |

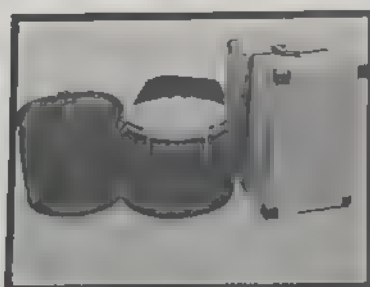
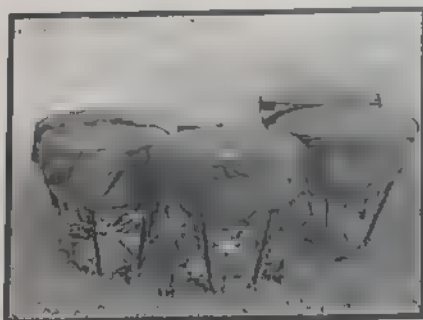
You may also want to keep these items close by for general maintenance

- cymbal polish
- cleaning rags
- touch-up paint or spray paint
- black magic markers
- Windex
- spare heads for all types of drums

## COVERS, CASES, AND BAGS

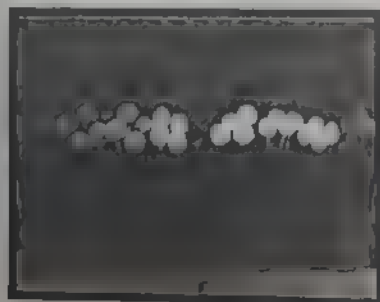
Many instruments come with a cover from the manufacturer. Most of these covers are meant to keep dust off the instrument; they are not "travel-worthy." You may want to purchase **packing blankets** at your local hardware store. These will provide a little more cushion and they will hang over the sides of the instruments to protect keyboard resonators and timpani bowls. These covers should be kept on the instruments whenever they are moved to and from rehearsal, transported to shows, or when not in use. They

are also great for keeping the sun off the instruments during rehearsal breaks. You may also want to purchase or make **hard covers for your timpani heads**. With a circular saw, cut ply wood pieces to fit each drum. Cover one side with adhesive felt and place it directly on the drum heads or on the dust cover. This will protect the heads and keep them in tune for longer.



Certain instruments will require a little more protection. **Fiber or plastic cases** are a necessity for many of the smaller and more fragile instruments: tambourines, concert snare drums, castanets, and so on. You may even want to invest in a hard case for your suspended cymbals. This is particularly true if you use a "box" truck with no shelving or small storage spaces. These instruments could get crushed before you leave the parking lot!

Finally, you will need mallet bags and cymbal bags. Mallets are expensive and they can be easily destroyed if their shafts are broken. **Mallet bags** will protect the shafts and help to keep things organized. There are two types of mallet bags available today. One type of bag has narrow pockets and you have to put the mallets in shaft first. This allows you to identify the mallets by their heads, but does not allow for quick



changes. These bags are nice when you have trap tables. The other kind of bag has wider pockets and allows you to put the mallets into the bag head first. You may want to tape the butt ends of the mallets, otherwise you won't be able to identify which is which. These bags are best for quick changes. Make sure you purchase mallet bags, not **stick bags**. Stick bags are much smaller and will only hold a few pairs of mallets.





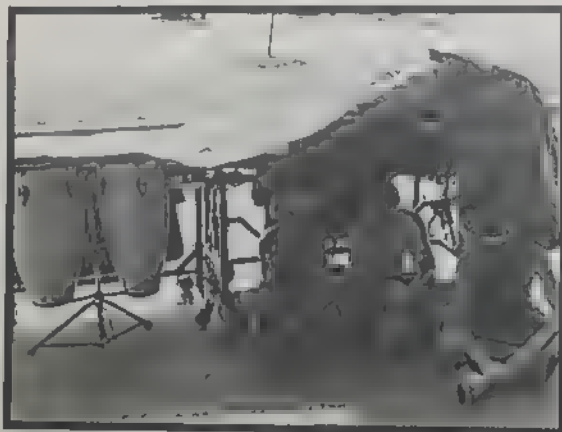
**Cymbals bags** can be used to protect your hand cymbals and suspended cymbals. Don't overload the bags, as they can get dangerously heavy and this will quickly damage the handles and the bottom of the bag itself. Store the cymbals upright, on their edges. If you store them flat, the weight of all of the cymbals will crush the ones on the bottom of the stack. For tam tams, try sewing two packing blankets together to form a giant, soft bag.



## POLISH AND OIL

The eternal cymbal question, to polish or not to polish? The answer is a matter of taste. If you like the way your cymbals sound and look, then leave them as they are. If you aren't happy with your cymbals, polishing will not only improve their look, but it will also remove dirt and oils which have slowly dampened them over time. If you choose to **polish** your cymbals, use the polish that is recommended by the manufacturer. You may also want to try Brasso (in a well ventilated area) which is easily found in any hardware store. All polishes will require you to use a **soft rag**. If you use a harsh sponge, like a Brillo Pad, you will permanently damage the finish of your cymbals. Polishing cymbals, crotales, and tam tams takes a long time and a lot of "elbow grease." Once again, this is all a part of the gig!

**WD40** is a pit member's best friend. Make sure to lubricate all of your casters and moving parts. This may include vibe pedals, bass drum pedals, hi hat pedals, and timpani pedals. Never use lubricants which attract dust, such as petroleum jelly. This will "muck up" all of your moving parts and could cause permanent damage. This includes lubricating tension rods and casings (lugs) when changing any kind of drum head.



## BATTLING MOTHER NATURE

No matter where you live, at some point your pit will have to deal with rain. While instrument covers and blankets can handle a light mist or drizzle, you must be prepared for the occasional torrential downpour.

The best preventative measure is the **waterproof tarp**. Most hardware stores will stock these waterproof, blue, plastic tarps. They aren't expensive so buy enough to cover your pit and perhaps a few extras for safe measure. Make sure the tarps travel with the instruments to every rehearsal and performance. You

never know when you'll need them! Also, with rain, usually comes wind. You may want to bring a few **10 pound weights** to put on the edges of the tarp. This will prevent the tarp from getting blown over. Many find it easiest to push the instruments into blocks, then cover them, rather than trying to keep the instruments in their performance setup.

Once the equipment is safely inside, make sure **everything gets dried thoroughly**. Dry the bars with a towel or rag, dump any water that may have gotten into the resonator tubes, lay out wet mallets to dry, use a hair dryer to dry vibraphone felts or cymbals felts, make sure all metal and moving parts get towed off. It is also a good idea to hang out the tarps to dry. A rolled-up, wet tarp will develop a special odor in a nice, warm band room.



## KEYBOARD MAINTENANCE

Your mallet keyboards are one of the biggest areas of investment for your band or corps. Make sure anyone who moves or plays the keyboard instruments is familiar with these concepts.

It is a good idea to **clean or moisturize wood bars** periodically. Wood furniture cleaner such as Old English works fine in *very small doses*. Don't muck up the bars by coating them with oily, waxy cleaners. **Never use water to clean wood bars**. For synthetic bars, a moist cloth will work fine to remove dirt and dust.

Every once in a while, you will have to replace the **suspension cord** (the string that goes through each of the bars). It is common for this to fray and break after frequent use. When replacing the cord, make sure it is thin enough to thread through the nodal holes in each bar. Forcing a thick string through small holes can cause insanity! Also, it is recommended to use a soft cord, such as cotton parachute cord. Abrasive nylon rope can result in a slight rattle when the bars are struck. For emergencies, you may want to **pre-cut several lengths** for each instrument. Also **burn the ends** of the cord with a lighter so they will pass through the bars easier. You can store these pre-cut pieces in the mallet bags or the Pit Maintenance Box.

Be sure to periodically check the **tension on the suspension cord**. If it is too loose, you may run the risk of the bars drooping and bouncing into the frame rails or resonator mouths when struck. Not only does this sound terrible, but it can easily damage the bars.

If you've used your marimba in the sun for a few years, you may find that the **rubber insulation sleeves** on the support posts are cracked and deteriorated. It is important for each support post to be lined with a thin rubber sleeve. This helps prevent contact between the metal posts and the bars. Thin latex surgical tubing works well for this. You should be able to find this sort of material at a hardware store, or medical supply store. To help slow this natural aging process, remove the bars, and apply a light coat of **protectant**, such as Armor-All, to the rubber sleeves.

**Keep casters clean and oiled**. The better your instruments roll, the less "shock" will be inflicted on the frames and bars. Besides, squeaky wheels will make your pit appear and sound less professional.

**Check the Nuts and Bolts**. Before *and* after each move of the keyboard instruments, check all of the wing nuts and supports on the frame. These can easily rattle loose during transport. If a support bar rattles loose, the instrument could easily tip over. Not only will this cause a lot of damage to the instrument, but someone could get seriously injured. Some of these instruments weigh hundreds of pounds!

## MORE TIPS FOR HAPPY KEYBOARD INSTRUMENTS

(see also "A Quick Guide for the Volunteer Pit Crew" on page 96)

**Keep the bars covered at all times** with a thick, light colored, packing blanket. This will help reflect sunlight, and protect the bars from scratches, bumps, and bruises. You'll score bonus points with your keyboard if it has a waterproof cover!

**Keep the bars and resonators (tubes) cool.** When not in use, store the instruments indoors or in the shade (even if they are covered). The cooler the bars, the more in tune they will be. The cooler the resonators, the more volume they will create for the instrument. Each bar and its resonator are tuned to the same pitch. If heat gets to either the bar or resonator, the instrument will sound "dead."

**Purchase an extra set of bars.** Sure, this plan is for the "big spender," but if you have a budget that can handle this, it's a great way to go. You can use one set of bars for practice, and the other set for performances only.

**Avoid touching the bars.** Dirt and oil from your fingers can accumulate on the bars and eventually degrade their sound. The only time you would need to touch the bars is when removing them from the instrument or replacing the suspension cord.

**NEVER place other items on top of the keyboard** (i.e. books, percussion hardware, cymbals, tambourines, etc.). Remember that mallet instruments are musical instruments, expensive ones at that! Give them the respect they deserve by not using them as tables.

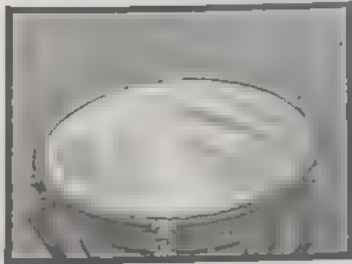
**Never lean on the instrument.** This may sound like an obvious tip, but you'd be amazed at how tempting it can be to lean on those keyboards. Especially when you're analyzing a piece of music on a music stand or just taking a break. This can damage the string, bars, or frame. All of which are difficult and/or expensive to repair.

**Use appropriate mallets (see also "mallet selection" on page 83).** Using a mallet that is too hard will dent or crack the bars. One marimba bar typically costs around \$50 or more to replace, so this could be an expensive lesson to learn if you're not careful. Nothing sounds worse than a cracked marimba bar, except a cracked vibraphone bar. Yuck!



## TIMPANI HEAD CARE: CHANGING AND CLEARING

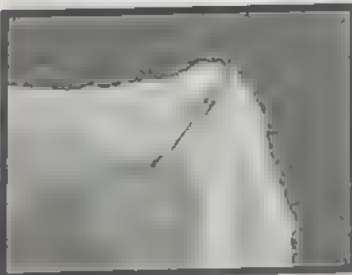
When timpani heads get damaged or need replacing, the process of changing heads is quite simple, but lengthy. Set aside the appropriate amount of time to make sure this process is done correctly. Proper "seating" and tuning of the head has a tremendous affect on the sound quality.



**1.** Using a timpani key, remove the damaged head. Remember to slowly ease off the tension by gradually loosening opposite tension rods (like a car tire). As you do this, you'll notice that the spring tension on the pedal causes the pedal to go up. It does this because the head isn't giving it as much resistance as when it is attached.



**2.** Now it's time to do maintenance on the inside of the drum. Start by cleaning out any dust or dirt that has accumulated in the bowl. **Avoid touching** the inside of the bowl! This will leave nasty, tarnished fingerprints. Use a polishing cloth or metal cleaner if this occurs. If any **dings or dents** have damaged the bowl, now is the time to hammer them out with a heavy, rubber mallet (the kind you get at a hardware store). If you decide to hammer out dents, go slowly and be very careful not to hammer too hard. Clean off the **bearing edge** of the drum. This is where the head makes contact. Also clean off the inside of the **counter hoop** (the rim). If any damage has been done to the bearing edge or the counter hoop, consult a professional. This will have a severe effect on the sustain and tone quality of the drum.

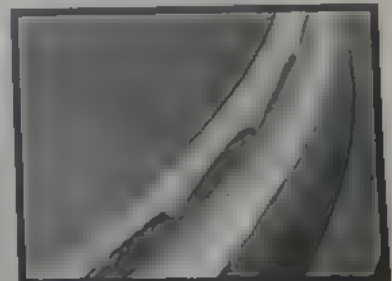


**3.** Remove any dirt or grime from the **tension rods** (screws) and the casings (lugs).

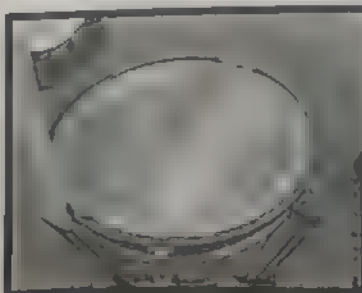
**4.** Since the head will be moving across the bearing edge of the drum whenever the pedal is moved, it is important that the **bearing edge**

is lubricated. The best answer is also, unfortunately, the most expensive: **Teflon tape**. This can be purchased from Lone Star Percussion for around \$40. This is *not* the type of Teflon tape commonly found in the plumbing department of your hardware store! Lubricants such as petroleum jelly and cork grease attract dirt and dust which dampen the head, so don't use them. Some people use paraffin wax, but wax buildup can cause a buzzing sound. Place a ring of Teflon tape all the way around the bearing edge. If you can find a teflon spray that adheres to the surface of the rim, that can

work nicely as well.



*These Adams timpani come lubricated with dry coating of teflon spray.*



**5.** Place the new head on the drum, then, place the counter hoop over it. If you have extended collar drum (there is a space between the bearing edge and the counter hoop) use a ruler or your fingers to make sure the rim is equidistant from the bearing edge.



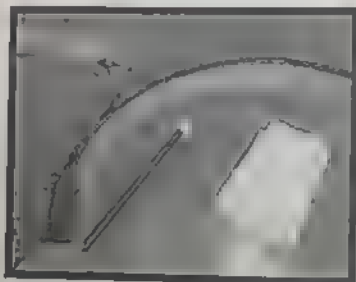
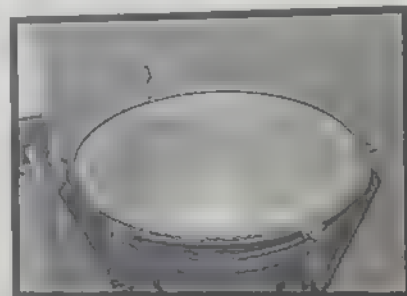
*Some players prefer to play just outside the line (left). Others prefer to play perpendicular to it (right). Notice how this affects the placement of the head in relation to the pedal*

Many plastic timpani heads have a line printed down the middle indicating the "backbone" of the head. This line indicates the "grain" or direction in which the plastic film was stretched when it was originally manufactured. It's often called the backbone in reference to calf skin heads where the backbone of the animal was apparent by the skin's discoloration. Where you strike the drum in relation to this line affects the resulting sound quality, so when placing the head on the drum, be sure to check the direction of the backbone line.

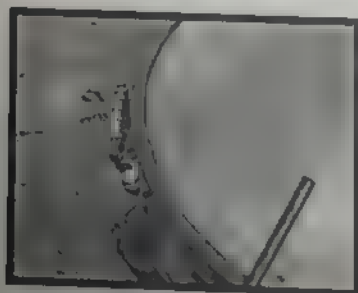


**6.** Lubricate the tension rods with WD40. Avoid using petroleum jelly, this will collect dust. Finger-tighten the rods into the casings. You may need to force the heel of the pedal down if the rods don't reach.

**7.** Gradually tighten opposite rods until you are in the proper playing zone for the drum. See the timpani range guide on page 22. The pedal should "stick" wherever it is placed. If the pedal "creeps," see page 24 for more information.



**8.** Now you will need to **fine tune or "clear" the head**. This will require a quiet room. Place a wallet or a small rag in the center of the drum. This will slightly dampen the head. Using a general weight timpani mallet, tap the head 2 -3 inches from each tension rod. Your goal is to match each of the pitches by tightening and loosening each rod as necessary. This will take some time and patience...and a tuner. Sometimes it helps to have someone stand about 10 feet away and listen. They won't hear all of the overtones and it may make it easier for them to hear pitch tendencies. **The timpani will need to have their heads cleared very often.** It is best to do this before each rehearsal and performance. If you do this often, you will know the tendencies of your drums and it will take less time.



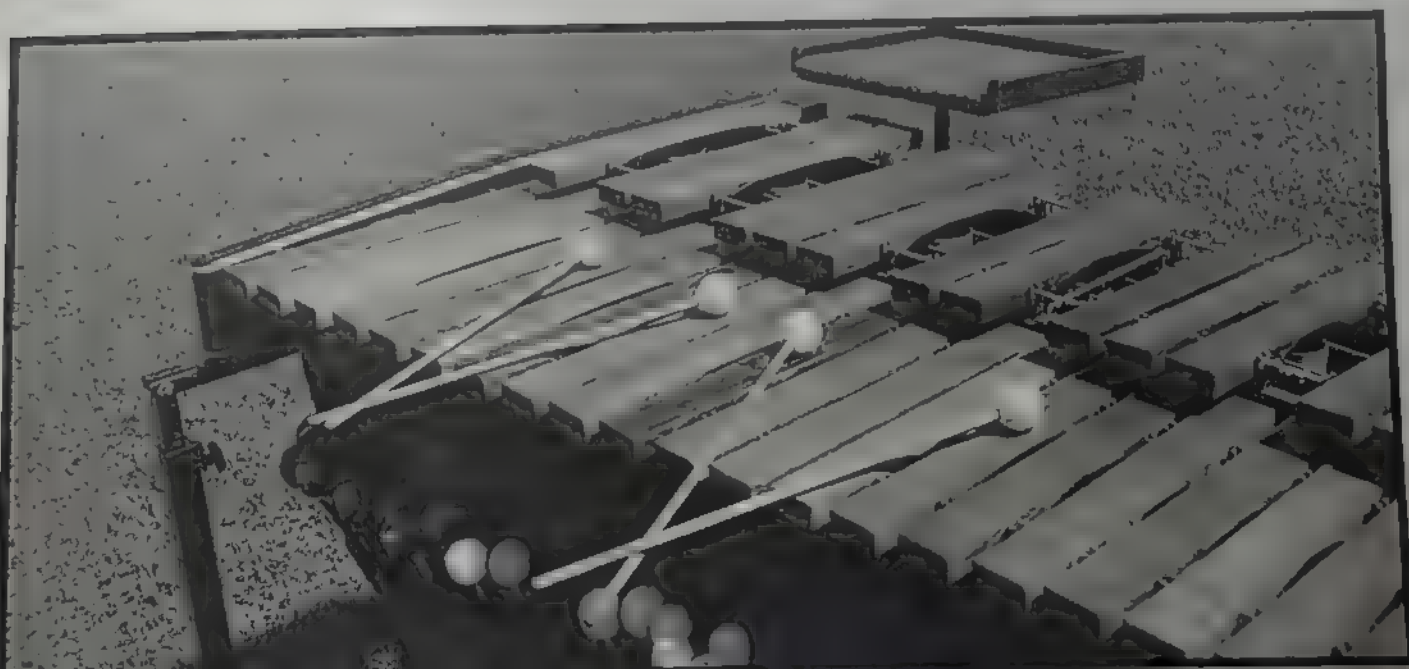
**9.** If you use gauges, they will need to be reset after each head change. Use a tuner.



## **TRANSPORT TIPS FOR PIT MEMBERS AND PIT CREW**

Part of getting the pit on and off the field successfully involves the assistance of volunteers or pit crews. Oftentimes you can enlist the help of willing parents. Since they may not be trained to take proper care of percussion instruments, it's important to guide them in order to prevent damage and injury. Sure, a major tip-over will damage an instrument in an instant, but what happens more often is that your expensive equipment starts to fall apart due to years of poor care and handling. That can easily be avoided with some simple, friendly training.

Hold a short meeting before each season to discuss proper instrument care. With a little guidance, the pit crew will become a well-oiled machine. On the next page is a listing of general transport tips to share with the folks who may not have experience with percussion instruments. Feel free to make copies of that page and distribute it to your pit crew.



## A Quick Guide for the Volunteer Pit Crew



**Right!**



**Pull, don't push instruments over tall grass, bumps, or gravel.** Since these terrains give resistance to your carts, they can damage the frames if pushed. **Lift and pull** over small curbs. Pushing over curbs (or even small bumps) will inevitably put undue pressure on the frame, causing it to warp or become less sturdy.



**Right!**



**Wrong!**

Carry timpani by the **struts**, not the rims to avoid de-tuning the heads.

*What NOT to do with timpani.*



**Right!**



**Wrong!**

*A small bump can topple your marimba.*

When moving keyboards on smooth surfaces, it's best to **push from the big end**, and most beneficial to have one person on either end of the instrument. To avoid tipping, **Push lengthwise** (low-to-high), not sideways (from the middle). **Check the wing nuts and support bars** on the keyboards before and after every move.



**Wrong!**

*Mallet instruments are NOT tables.*

**Protect the bars! Never stack anything on top of the keyboards** when transporting. Mallet instruments are not carts to transport other items. Also, don't lay small xylophones or glockenspiels upside down on their keys.

**Listen to the students.** They play the equipment all the time and know how it will react, where it needs to go, and when. Have a meeting and **dress rehearsal** to practice getting on and off the field. Make sure everyone knows their assignments so there is no confusion as you load. It's important to be efficient, but there is never so much of a hurry that damage to instruments or injury to students or crew should occur. **RELAX!**



*"I've told you a thousand times..."*

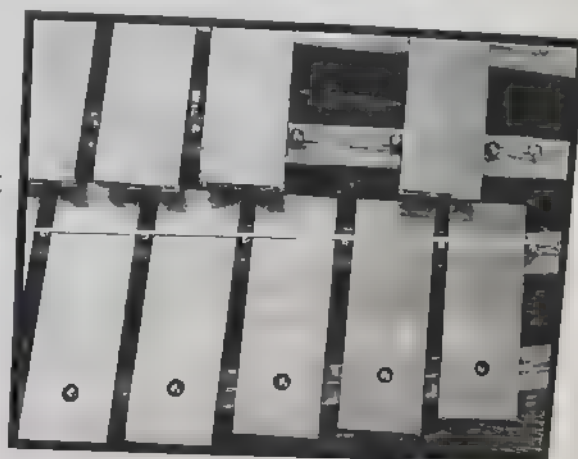


UP FRONT - Section 1: Instruments of the Pit

If you have a glockenspiel in which the bars have a hole on one side, and the other side rests on the rail, you may experience the common occurrence of **bars bouncing** while you play. There are a couple solutions for this.

**1.** Play with a lighter touch. Orchestra bells do not take a lot of force to be heard. Your touch on this instrument should usually be lighter than that of the other mallet keyboards.

**2.** Secure the "free" end of the bars with some unwaxed dental floss. This will block the bars from bouncing, and since it is a very fine material it won't dampen your bars significantly (see photo).

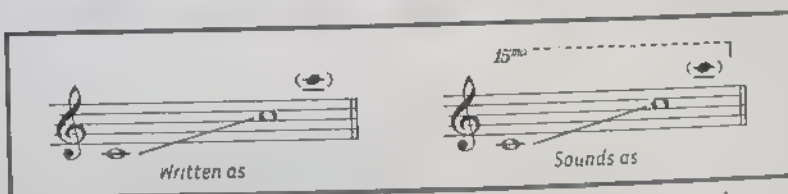


*Unwaxed dental floss strung over the free end of the glock bars.*

## CROTALES



*Crotales can be purchased in one or two-octave sets, or as individual notes.*



*Range: one or two octaves (sounds two octaves higher than written)*

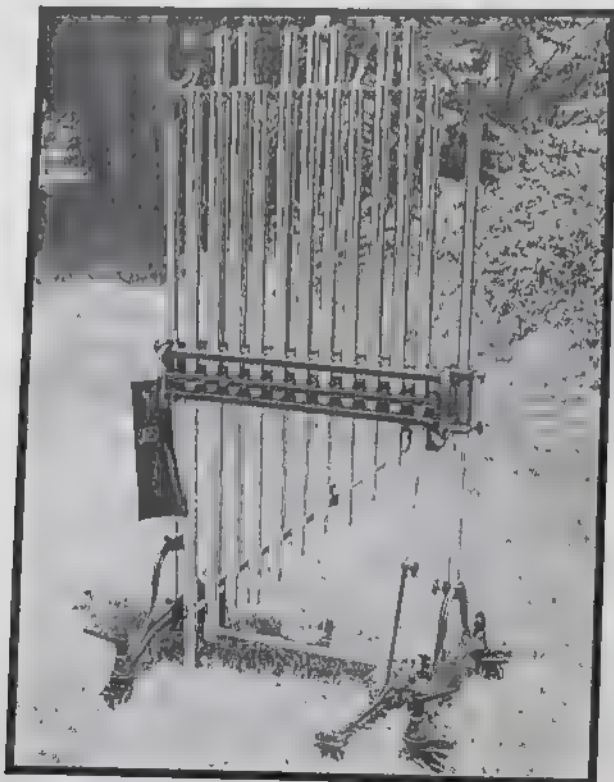
Crotales (pronounced cro-TAH-lees) can add a new dimension to the sound of your pit with their colorful tone. Crotales (sometimes called “antique cymbals”) are thick, chromatically tuned metal disks that resemble an upside-down cymbal. Like the glockenspiel, they produce a bright timbre, however they have a more “shimmery” sound and a much more complex set of overtones.

Typically, crotales are sold by the octave (single chromatic octave sets contain 13 disks) and most manufacturers offer them in two different octaves. They tend to be expensive, so it's usually best to assume that the “standard” crotales range is ONE octave.

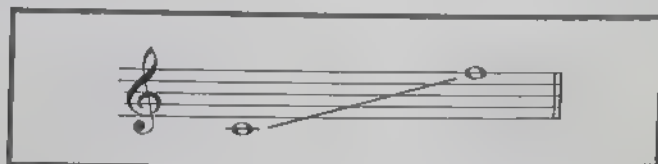
Since crotales supply a bright, “shimmery” effect, they are most commonly played with **hard mallets** (plastic, aluminum, or carefully with brass). It's important to note that these disks are easily hammered out of tune, especially after being exposed to direct sunlight. Because of this, it's good practice to cover the crotales with a white towel when they are not in use during an outdoor rehearsal and it is best to play with a *light touch*. This will produce a well-blended and musical tone. Save the hammering for metal shop!



## CHIMES



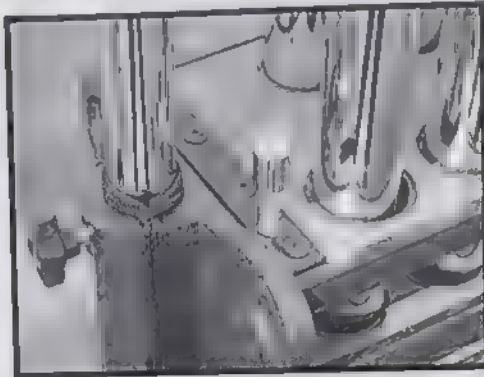
*Often mistakenly called "tubular bells," chimes are another standard member of the pitched percussion family. Made of long, thick brass tubes, chimes have a very noble sound that blends well with a variety of instruments.*



*Range: 1½ octaves (sounds as written)*

All chimes manufactured today have a **dampening mechanism** similar to that of a vibraphone. Chimes have a lot of "ring," so for concert use, the dampening mechanism is quite useful. For outdoor use however, it's not quite as important. From a distance, the listener doesn't hear all of the "ring" that the chime player hears. This is also true with the vibraphone. The ringing over of these tones can "fill out" your ensemble sound and help to project the sound of these essential metallic instruments.

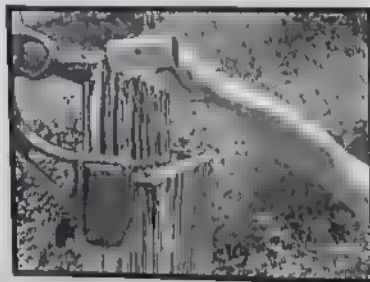
## Helpful hints for chimes



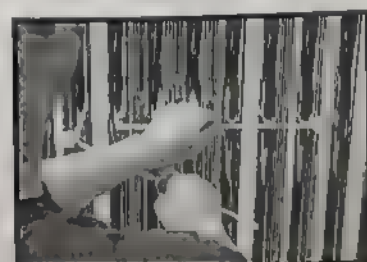
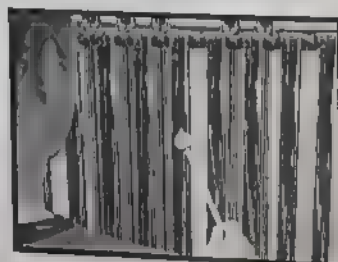
Most chimes are made with a sustain lock button which will enable the pedal to stay down in the "ring" position. This can be quite handy when players are "multi-tasking."



Using a **chime hammer** (rawhide or acrylic), **strike** the chimes at a flat angle! This is one of the most important techniques to remember when playing this instrument. When struck at a more indirect angle, there is a significant decrease in the sound quality and richness of tone.



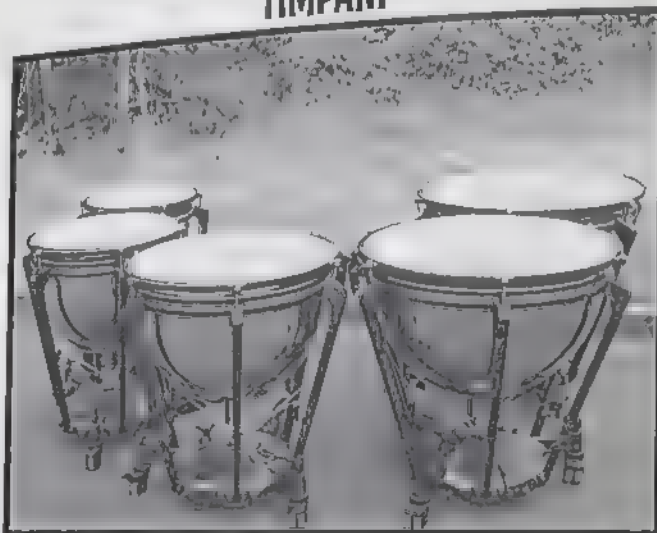
The playing surface of the chime hammer should be **parallel** to the chime tube. This may entail raising the arm higher to get the right angle for accidentals.



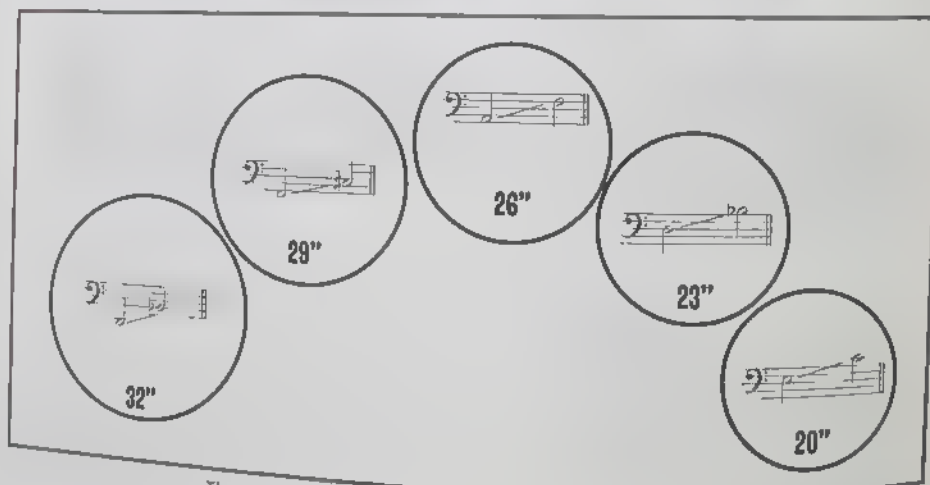
Other interesting **effects** can be achieved on the chimes by striking the middle of the tubes with a hard xylophone mallet (left picture), or by scraping across (glissando) the tubes (right picture).



## TIMPANI



*Timpani can be arranged in a variety of setups. Most setups contain two to five drums.*



*Timpani ranges, according to size (sounds as written).*

As with the keyboard instruments, a separate section has been dedicated to developing timpani technique (see page 110).

When timpani are played well (and the parts are complimentary to the ensemble) they can be one of the most valuable assets to your overall pit sound. One main reason for this is that none of the other pitched acoustic instruments have the range depth of the timpani. If you are fortunate enough to have a 5-octave marimba, it will be able to match the lower range of the timpani, but not with the depth and power that the timpani can supply.

The timpanist has several **responsibilities** that are unique to their position. First, it is extremely important that the timpanist has a good understanding of relative pitch.

The timpani technique section has several exercises and pointers for developing pitch accuracy. Developing these skills can take time. Sometimes it is easier to take an instrumentalist with good ears (say a bassoonist) and train their hands, than vice versa. Furthermore, once you have selected a student to handle the timpani position, it is very important that the drums be maintained. This means that the heads should be kept "cleared," and in range. This is no small task. Keeping timpani in tune, especially when they are being transported and played frequently, is practically a full-time job.

Try to budget money to replace your **timpani heads** once per year. (See the section on changing timpani heads on page 93). However, if they are only being used for indoor concert playing, they'll definitely have a longer life span. But let's face it, we've all seen timpani in schools that look like the heads have been on for 10 years. They'll be scratched, dented and beaten up, yet the band still keeps using them! That would be like playing a clarinet with a cracked reed, or a trombone that's never been cleaned. Yuck!

There are many choices for timpani heads. They can be a little pricey, so you may not have the luxury of experimenting. For general use, the **CLEAR** standard weather kings by Remo are always a good starting point. They have a bit more projection outdoors than the hazier films offered by different head manufacturers. Remember, it won't matter what types of heads you use, or what types of mallets you use, if the heads are not kept "**cleared**." This is probably the most important maintenance topic for the timpanist. This is discussed on page 94.

As for **mallets**, start with a pair of "general mallets" and perhaps a pair of "staccato" mallets for a more articulate sound. Also experiment with "cartwheel" mallets for silky, smooth rolls, or a pair of "ultra-staccato" mallets for very articulate passages. Beware! Do not confuse hard mallets with mallets that will produce a lot of volume.







*Picture of several bass drum mallet options*

Next you will need **mallets**. Start with a good general purpose mallet such as the Innovative Percussion CB-2 or CB-3, Vic Firth General or Legato, or Tom Gauger General or Legato. Next you can purchase a pair of rolling mallets or a staccato or chamois mallet for "bright," "punchy" effects. Avoid using marching bass drum mallets for your concert bass drum as they are usually too small and harsh sounding

Like timpani, it's also important for the heads to be "cleared" (see page 94). Next, you can experiment with the **tuning** relationship between the heads to achieve different effects. Regardless of what tuning you use, be sure that the batter head (the side you play on) faces the audience. If the heads are facing the end zones, the sound and effect of the drum will be greatly diminished.

## Different tuning schemes for concert bass drum

### **Front head tighter than back head:**

*Longer "rumbly" sustain, with a slightly better articulation from the front.*

### **Front head looser than back head:**

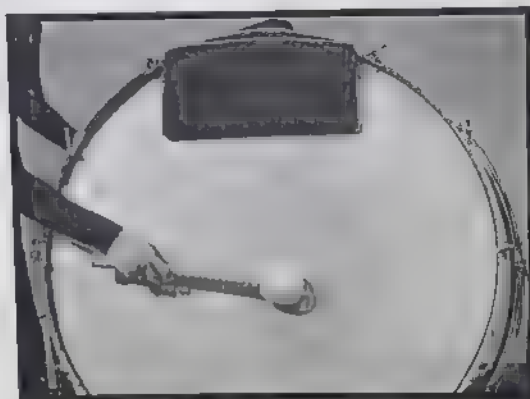
*More sonic "punch" on impact notes, but less of the low sustain for softer parts*

### **Both heads equal in tension/pitch:**

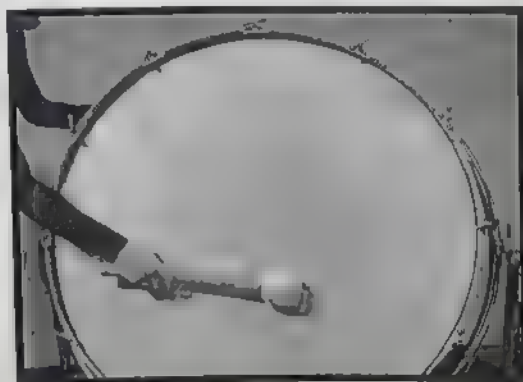
*Good all-around sound, but some articulation may get lost. Sustained overtones may tend to sound a little higher in pitch when standing near the drum.*

### Technique considerations

A well-tuned bass drum will have a long sustained sound. To control the sustain, use your free hand to **dampen** the batter head *after* striking the drum. The audience will seldom hear the sustain on the back head. If your fingers make a vibrating sound when you dampen the head, try holding a lamb's wool car washing mitt in your dampening hand. By leaving the mitt on the head when you strike the drum, you can produce dry, staccato notes.



For fast articulated passages (especially when they require two hands), try hanging a towel on the batter head. Make sure you don't over-dampen!



As for **playing zones**, a good general purpose playing zone is about 4 to 6 inches away from center. This will provide a nice balance of articulation and tone. For punchy impacts, play closer to center.



For rolls, each hand should be approximately half way between the center and the edge. You don't need to roll very fast on a concert bass drum. Let your ears be your guide!

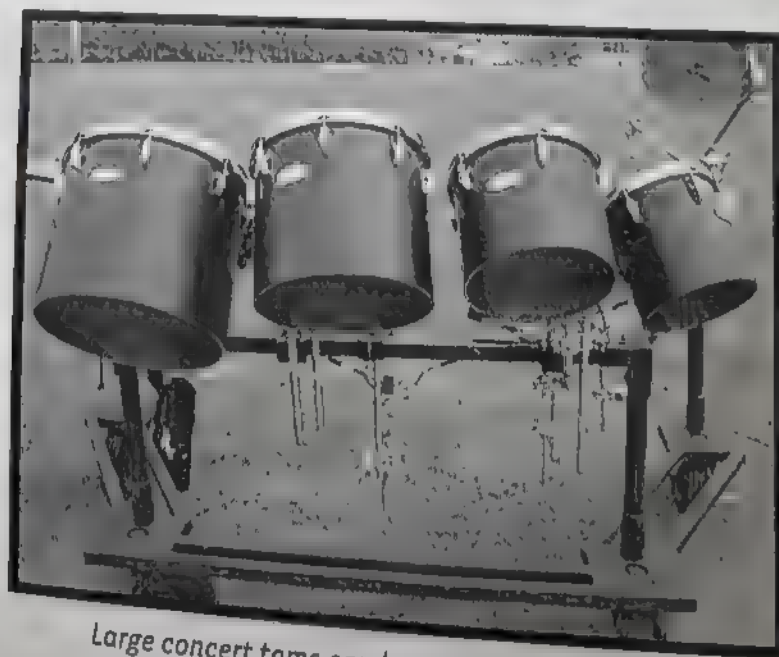
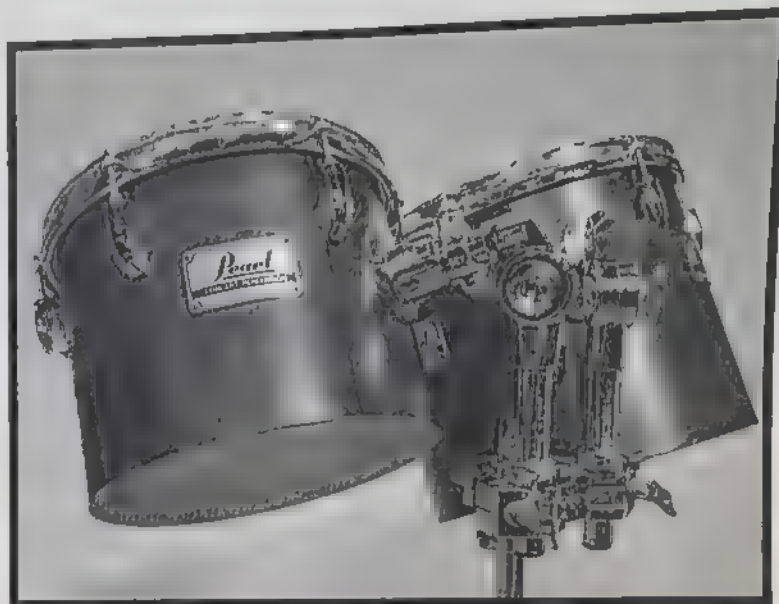


## TOMS (concert toms and tenor drums)

This group of drums is an important part of the pit arsenal as they can be used in several ways: melodic/tonal passages, rhythmic ostinatos, or even impacts. When using the general term "**toms**," most people are referring to two-headed drums ranging in size from a 6" diameter to 18".

**Concert toms** are single-headed, and are frequently seen in sets of two to six drums. They are available in the same sizes as the two-headed toms. **Tenor drums** are usually older, two-headed marching drums (14" or 15" diameter) without snares. For most applications, single-ply drum heads work best on these drums as they allow the audience member to hear more tone and less "punch."

To produce even more tone, play the drums off-center with a light touch. If it's punch you're after, try a 2-ply head on the top of the tom with a single-ply on the bottom. This can be a great effect on larger toms (16" or 18") if you're looking for impact or "Sing, Sing, Sing" style rhythm. Have fun experimenting with **sticks and mallets** on your toms. Use snare sticks for a more articulate, thinner sound or try a covered mallet (felt or yarn) for a warmer, "rounder" sound.



*Large concert toms can be easily transported by mounting them on a rack with wheels.*

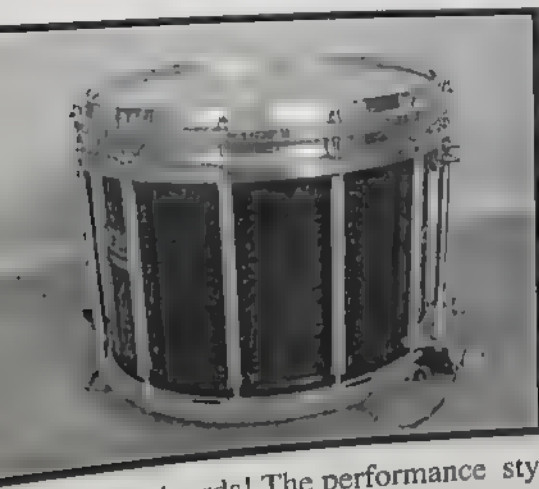
## Snare Drums



*Clockwise from upper right: Piccolo snare drum, field drum, snare drum with multiple strainers, small diameter (10") snare drum.*

### FIELD DRUM (a.k.a. Military Drum)

This generally refers to a deep, wood-shell snare drum with gut or cable snares. It should be tuned much lower than a contemporary marching snare drum, and sounds best using plastic or synthetic skin heads. Its sound should be deep, and the snare tension rather loose, depending on the desired effect. Heavy, concert snare sticks with a large bead tend to work well on these types of drums.



### SCOTTISH PIPE DRUM

Sometimes called "Scottys," the pipe drum is one of the main "voices" of the Pipe Bands in Scotland. It has a very distinctive sound due to its high tension (using woven kevlar heads), and dual snares. One snare mechanism is under the snare side head, and the other is underneath the batter head. Both snare sets are usually wire, unlike the gut snares on conventional marching snare drums. This gives this drum a very unique, high-pitched, ultra-crisp sound. Players who specialize in Scottish pipe drumming are generally rudimental

wizards! The performance style is very different than American drum corps. The notes are written differently, rolls, flams, and drags are interpreted differently, even the sticks are different. To be a true "pipe drummer" requires quite a bit of training. For our purposes, these unique drums can be used in the pit to obtain different colors. Check out Ralph Hardimon's percussion feature, "Musica Bohema" for the 1984 Santa Clara Vanguard. The pipe drum is the leading voice, and is to this day, one of the most innovative pieces written for drum corps.



*Scottish pipe drums have wire snares under both the batter and snare side heads*



## Keyboard Technique

A solid foundation in technique will provide you with the ability to express yourself musically. It is important not to lose sight of this. Perhaps you've seen one or both of these scenarios. A student practices scales all the time and knows all of the exercises, but struggles with show music and solos. Or perhaps you've seen a performer who knows all of the latest solo literature, but can't figure out why they keep hitting wrong notes or why their dynamics are monotone. These scenarios are quite common. Students must learn to apply technique to music and learn to make music while practicing technique.

## Stance/body position/posture

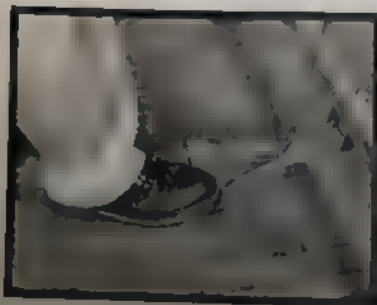
Good technique starts with having a good foundation. Good posture will allow your body to most efficiently do its job. Playing keyboard instruments can be a very physical activity, so it's a good idea to give yourself a few guidelines to follow.



In general, your feet should be about shoulder width apart, keeping your knees relaxed and your back straight. Also, **don't cross your legs**. This may sound obvious, but sometimes players have to "travel" to different ranges of the instrument (especially on marimba). If this is necessary, move your stance as little as possible.



It's important to note how far back from the instrument you are **standing**. It is common for beginners to get very close to the keys, sometimes so close that their pockets are brushing up against the bars. Not only will this dampen the bars, but it puts your arms and elbows at somewhat of a "cocked" position. This will make it difficult to play a proper stroke and stay relaxed.



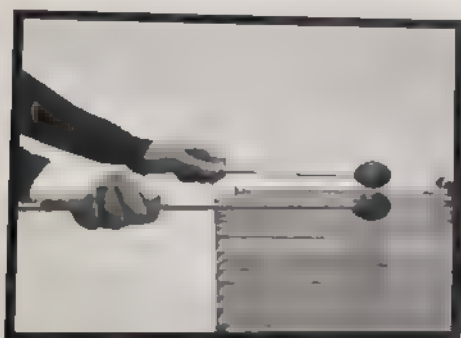
**Vibe players** will need to keep one foot forward for pedaling. Remember that you don't have to use your entire leg to pedal! Try using just your toes or the front of your foot to pedal. This will help you keep your balance and keep you from "over-pedaling."



Try to **avoid leaning over** the instrument. This will cause serious back strain. If this is an issue, your instruments may be too low. If you don't have height adjustable frames, try installing larger casters or blocks to rest the instrument on. Having taught pits with heights that ranged from 6'5" to 5'0", we've found that it's a little easier for shorter players to adjust to taller instruments than vice versa.



**Avoid forcing your wrists down** to the instrument before you play. Forcing your wrists down, makes you extend your wrist to the full "up" position. Your wrist has no room to turn. Your only alternative is to start playing with your arms. Again, this is a very common problem with tall players on short instruments.



When you step up to the instrument, your wrists should be in a neutral position.

**Avoid tension** in other parts of your body. Besides the obvious muscles that will be involved with playing (wrists and fingers) some other common tension areas are shoulders, elbows, neck, and yes, even the face. **Relax!**





## Basic 2-Mallet Grip

The basic **two-mallet grip** revolves around the concept of a relaxed and natural hand position. If you let your hand hang by your side you'll notice the natural curve of all your fingers. Keep this look in mind as you go through the following setup.

**1.** Place the mallet between the **first knuckle of your index finger and the pad of your thumb**. This is a very important contact point as it is the **fulcrum, or pivot point**, of the mallet.

**2.** Start with your fulcrum **one-third of the way up the mallet shaft**. In certain situations you may need to choke up a bit, but seldom do you need to go further back on the shaft.

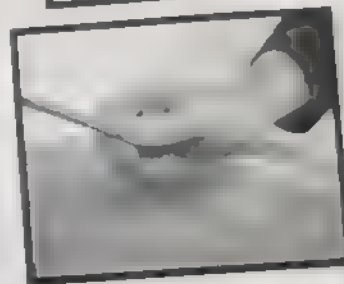
**3.** The **other fingers** should wrap around the mallet in a curved and relaxed manner.

**4.** Leave a **little space** between the mallet shaft and the palm of your hand. This will help to relax your stroke and let you imitate the look of a natural rebound.

**5.** When setting up to the keyboard, your **palms will be flat to the keys**. This should be a relaxed position, don't force your hands over.



**6.** The mallet heads will be **slightly angled in** toward each other.



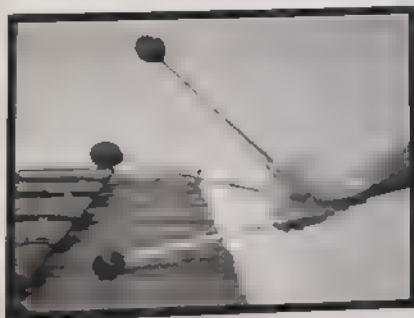
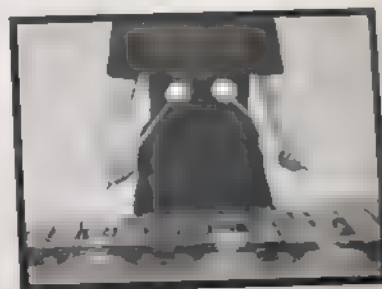
## Wrist motion

As you strike the first notes on your keyboard of choice, remember that you *must* continue to follow all of the previous advice for stance, body position, and grip. Please reread the previous sentence.

Play this exercise while keeping the following pointers in mind:



1. Start with your mallets in the **"up" position**. They should be at the height that you want to play each stroke of the exercise.



2. Play with a **continuous and relaxed wrist motion**. This is the **legato stroke**. The fulcrum should stay firm while the back three fingers relax and move with the stick. Again the stroke is mostly wrist at this point, not fingers. The back three fingers can contribute more as the tempo increases.

3. Make sure that your **mallet paths** are straight up and down. You don't want any sliced strokes or ellipses; these are very inefficient and inaccurate strokes.





**4.** Make sure that your **forearms and elbows stay relaxed** during this whole process. They should not contribute to the stroke motion. These "arm" strokes are very inaccurate and harsh sounding.

**5.** Strive for a **consistent sound** between each note on each hand. This will require a consistent firmness between your fulcrums, a consistent velocity of the mallet, a consistent playing zone on the keyboard, a consistent height for each stroke, and striking with the same part of the mallet head each time.

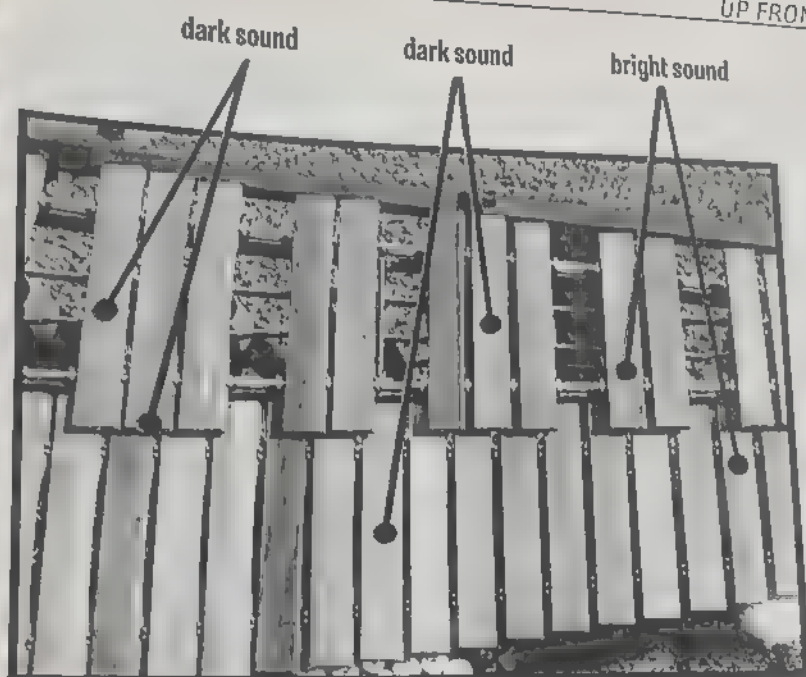
**6.** If one hand is not playing it should stay relaxed and in the "up" position

**Right!**



**Wrong!**





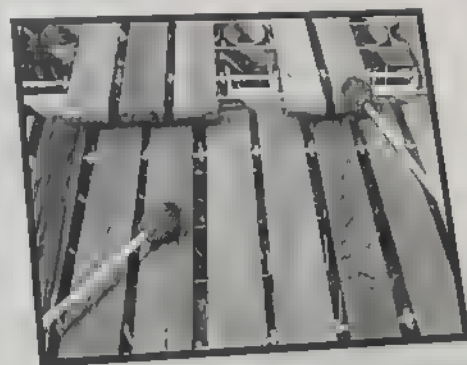
Warmer sounds can be achieved by observing the relationship of the playing zone to the center of the bar. Different zones will work more comfortably for certain patterns or voicings.

## Playing Zones (Marimba, Vibraphone, Xylophone, Glockenspiel)

For all of the keyboard instruments, the tone bars have a number of playing zones. The **dark** playing zones are great for general purpose playing. They have a focused fundamental and a pure sound. The **bright** playing zones have a thin, brittle sound. Though most people shy away from playing in the bright playing zones, these areas of the bar can add a great special effect, just make sure it's obvious that this is your intent!

The big question is: for general purpose playing, do I play on the **edge** or in the **center**? The answer: it depends. For passages that require a lot of movement and speed, try to play in the middle of

the bar for the natural notes and on the edge for flats and sharps. (see photo). When you play on the edge of the bar, try to play on the angle of the bar, as if you're slicing the mallet head in half. Playing on the center and edge will allow for maximum speed and fluidity. For other situations, such as the *Modular Four-Mallet Exercises* (see page 132), which don't require a lot of movement and speed, play in the middle of the bars for the majority of the time. Ultimately, this is the choice of the instructor. Try to take each musical situation as it comes and then decide what will allow you to play with the most fluidity and the most consistent sound. (Note: if



you have extended range marimbas, avoid playing in the center of the bars on the bottom octave. Not only is this the thinnest part of the bar, it is also the **octave node**. Play off-center, over the rail of the resonator tubes).

The **vibraphone and glockenspiel** present some other issues. It is possible to play on the back edge of the natural notes on the vibraphone (over the felt). Be careful with this technique when you have linear (run) passages as it is very difficult to achieve a consistent sound. As for the glockenspiel, try to play in the middle of the bars all of the time. Not only is this the best sound, but it also keeps the bars from hopping off the rails.



Playing on the back edge of the vibe bars can be very useful when holding four mallets and playing chords which have uncomfortable voicings.



## 4-mallet grips and techniques

There are two main camps for four-mallet technique: Burton and Stevens. The **Burton technique** was created by jazz vibist, Gary Burton. The **Stevens technique** was created by marimba virtuoso Leigh Howard Stevens. Both techniques have their advantages and disadvantages. The Burton technique can be somewhat easier to grasp at first, due to the fact that the wrist motion is similar to the two-mallet wrist motion. The drawbacks are that it can be a little slower with interval changes and getting large intervals on the low end of the marimba can be more limited. The Stevens technique is a very fast and flexible technique, allowing for quick interval changes and large interval spreads. The drawback with Stevens is that it may take a little longer to feel comfortable with the finger movements and wrist strokes.

It's up to the instructor to decide what technique best suits his or her students. If a student is comfortable and proficient with one technique, there is no need to switch to or learn the other. Some instructors feel the need to have their students play Burton technique on the vibraphone and Stevens on the marimba. Again, this is the instructor's choice, but realize that the two techniques are relatively unrelated and use completely different sets of muscles.

### Common question...

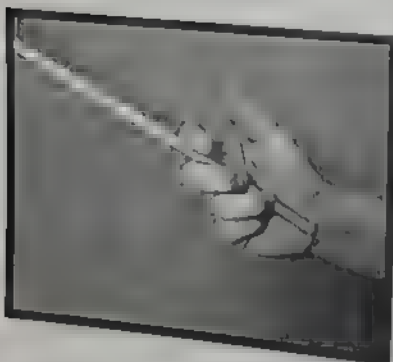
*Should all the pit members play with the same 4-mallet grip?*

### Our answer...

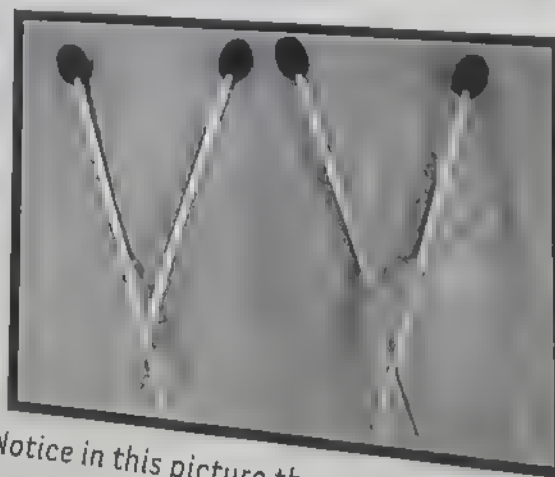
*Four-mallet keyboard technique should not be approached in the same manner as marching snare drum technique. We've found that as long as a student is comfortable with a certain grip, as long as it blends musically with the other players, it's perfectly OK to have different students playing with different 4-mallet grips. The main goal is to achieve a unified sound, rather than creating technical "clones" from player to player.*

### BURTON GRIP AND TECHNIQUE

This is a "cross-stick" grip. The mallet shafts actually cross over the top of each other.



To get the mallets in your hands properly, start with the outside mallet. The mallet should be placed between your index and middle fingers. The mallet should be anchored to your palm with the tip of the ring finger



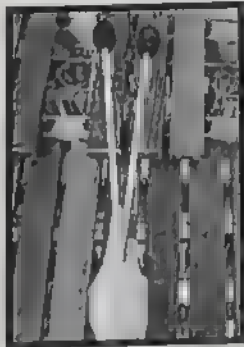
Notice in this picture the outside mallet is over the inside mallet (from the player's perspective).

Looking at your palm, the inside mallet should be placed on top of this mallet. The thumb and index finger will create a fulcrum similar to the two-mallet grip (see basic two mallet grip, page 100).



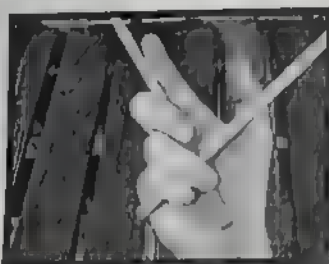
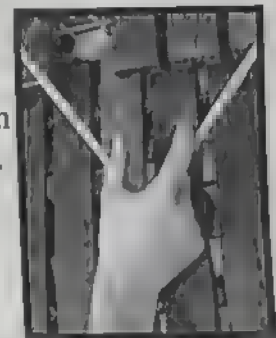
Wrap the middle finger and the pinky gently around the inside mallet.

**Changing intervals** with this technique is based on a spring-tension theory. When you pick up the mallets and set your grip, as described above, your interval will probably be somewhere between a fourth and a fifth.



To **decrease the interval size**, straighten the index finger and push your thumb in towards your middle finger. With this technique, you should be able to get the mallet heads to practically touch each other. Practice this interval change, from the starting position to a smaller interval, *away* from the instrument before applying it to an exercise.

To **expand the interval**, place the thumb and index finger in between the two mallets. Then, simply push out the mallets.



Make sure that the pinky and ring finger stay in position on the bottom of the mallets. This helps to create the spring-tension that will allow you to get your mallets back to the starting position.

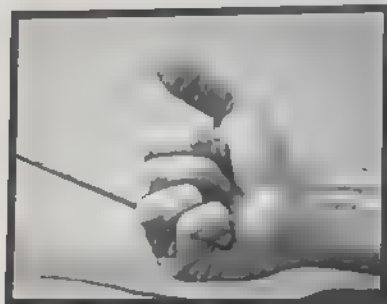
Again, students are encouraged to practice interval changes *away* from the instrument before trying to apply them to exercises. **You don't always have to stand behind an instrument to improve your technique or musicianship!**

*The specific stroke types and other technical issues will be discussed in the exercise section of this book on page 116.*



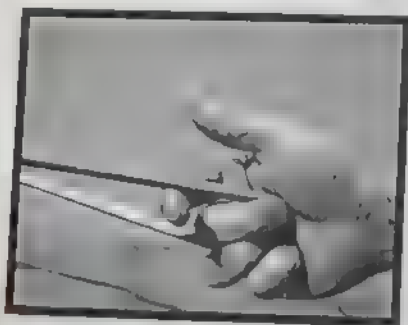
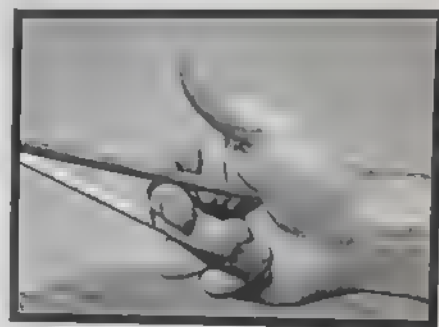
## STEVENS GRIP AND TECHNIQUE

This is an "independent" grip. This means that the **mallets do not cross** and they move independently of each other.



Start by getting the outside mallet in position. Place the mallet shaft between the ring finger and middle finger, then wrap the ring finger and pinky around the mallet. Notice that only a small "nub" of mallet is sticking out past the pinky finger. If too much mallet is sticking out, you will not be able to reach the larger intervals. In other words, don't waste the mallet!

Now you can set the inside mallet. Place the end of the mallet under the "meaty" base of your thumb. Then let the mallet rest on the first knuckle of your index finger. The index finger should be curved and relaxed. At this point, the inside mallet should be able to hang in your hand without assistance from your thumb or middle finger.

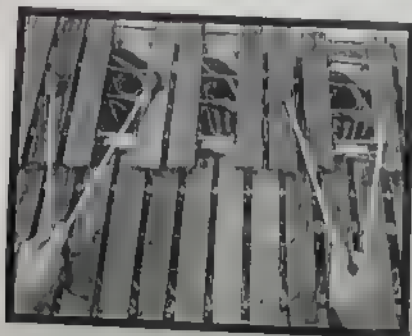


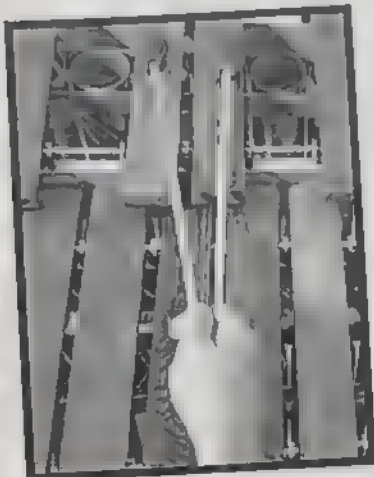
Now place the middle finger at the base of the mallet...

...and gently rest the thumb on top. The contact point of your thumb, once again, will resemble the two-mallet fulcrum.



Make sure, at this point, that the thumb is facing the ceiling and the index finger is curved and pointing "in." Now, relax. You will notice with this grip, that you don't have to "grip" the mallets. The **mallets simply hang in place** in a very relaxed hand. In fact, this concept is crucial. Each finger serves a very important function in changing the interval size. If they are tense, they can't do their jobs! As with the Burton grip, when you hold your mallets, as described above, your interval size will probably be a fourth or a fifth.





Decreasing the interval size is the job of the thumb and index finger. The thumb will rotate the inside mallet clockwise for the right hand (counter-clockwise for the left) as it moves towards the base of the index finger. The index finger contracts slightly, but it is still relaxed. You can see that interval changes are very smooth and quick with this technique.

*Notice that the mallet heads are different distances from your hand. This is correct.*



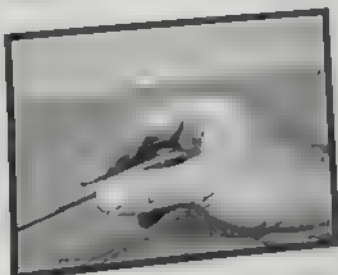
*Also notice that the thumb and index finger still make contact in the same place as before.*



Expanding the interval is a little more complicated. This is also one of the most common technical errors among younger players. It's best to start by setting up the larger interval in your hand so you can see where you are headed.

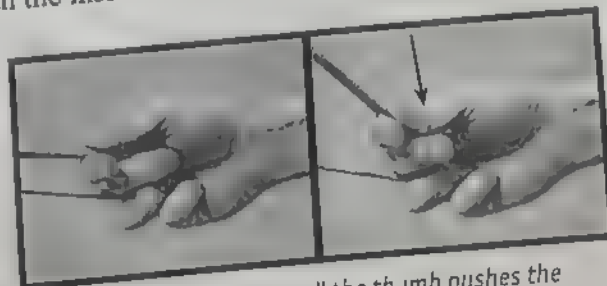


The butt end of the inside mallet will be placed at the base of the middle finger, towards the ring finger. It will rest near the first knuckle of a curved and relaxed middle finger. Once again, the mallet should hang in place with no tension in the hand (as pictured). Contrary to popular belief, large intervals should be very relaxed.



Now place the index finger and thumb on either side of the mallet. If you look down over your hand you will see your thumb, index finger, and middle finger. The ring finger and pinky finger should be curved and relaxed, hidden underneath the hand. The outside mallet remains in its same position with the ring finger and pinky wrapped around. In other words, the interval change is done with the inside mallet only. The trick is, how do we get to this position?

There are essentially two ways of getting the mallet into this large interval position: **rotating** the mallet or **"throwing"** the mallet. It may be easiest to start with the rotating method. Once again your thumb and index finger will do the rotating, but this time there is one big difference. **The thumb must push the mallet down into the hand first.** This gets the butt of the mallet shaft very close to its position at the base of the middle finger, rotating counter-clockwise for the right hand (clockwise for the left) the short: push down and rotate out.



*To initiate the "throw," the thumb pushes the inside mallet down like a lever. Index finger & thumb rotate mallet out to the new interval.*





While all of this is happening, the middle finger will extend out slightly to create the "shelf" for the mallet. If you do this correctly, the mallet head will draw a nice arc in the air. Be patient with this process. It's all about coordination and it takes some time to develop this skill. This is something that you can practice *away* from the keyboard.

After you've practiced the rotating method and developed a nice curved arc, you can move on to the "throwing" method.

This concept is very simple. You will use the energy of the rebound or upstroke to "throw" the mallet into position. Start by playing a few quarter notes at a small interval. When you're ready, throw the mallet, using the same curved arc, out into position. Your index finger, thumb, and middle finger will still make contact with the mallet to help guide it into place. Once again, this is a coordination exercise that can be practiced *away* from the instrument.

"speed bump"



One common problem when trying to get out into the large interval is the **mallet getting caught** on the skin at the base of your fingers. This is known as the "speed bump." The solution to this is quite simple: try pulling your inside mallet out about 1/16 of an inch. Now you have "less mallet" in your hand and it should glide right over the "speed bump."



Do not extend ring and pinky finger while increasing intervals.

Another very common problem when increasing the interval is extending the ring finger and pinky finger. Notice how the back of the ring and pinky fingers are in a straight line with the back of the hand. This is tension and should be avoided. If this is happening to you, chances are when your middle finger comes out to form the "shelf" it's taking those other fingers with it. It will take some time to develop finger independence. To check yourself, try practicing interval changes in a mirror.

As you can see, there are quite a few things to think about with this technique. This is what can make the learning process of the Stevens technique a little slower. The benefits, however, are an increased speed and flexibility, which no other technique can deliver. If this technique intrigues you, run, don't walk, to your local music store and purchase Leigh Howard Stevens' book, *Method of Movement*. This book contains everything you would ever need to know about the technique and it's written by the man himself!

## "Touch"

Oftentimes you'll hear an instructor comment on a player having a nice "touch" on the instrument. This has to do with the player's ability to **adjust the firmness of their fulcrum** for different passages of music and for different instruments.

By **adding pressure** to the fulcrum, you can get the core of the mallet "into the bar." This will produce a bright sound. By **relaxing the fulcrum** you will darken the sound. Marimba and vibe players should be able to adjust the firmness *while* they're performing. For example, if you were playing a passage on the low end of the marimba with medium-soft mallets, you would more than likely have to firm up your fulcrum as you ascended into the higher register of the instrument. If you don't firm up your fulcrum, the medium soft mallets will produce a puffy sound on the small bars. This is definitely not a good quality of sound. If you played the same passage with harder mallets, you would more than likely have to play the part in the lower register with an extremely relaxed fulcrum so that you don't get a harsh sound on the larger bars. Your ear should be your guide as to when to adjust your fulcrum.

Other keyboard instruments, such as bells, xylophone, and crotales, often use uncovered mallets (with no yarn or cord). These instruments are also naturally "bright" sounding. For this reason, your fulcrum can be relaxed for the majority of your playing.

Unfortunately, one common mistake in the marching percussion activity is that pit players sometimes tend to overplay the instruments. This is a bad habit for various reasons. First and foremost, it doesn't sound good. Also, it can damage the instruments and the mallets, or even injure the performers (tendonitis, carpal tunnel). **There is an extent to how much volume any instrument will produce until its sound quality begins to distort.** Be aware of the dynamic range of all percussion instruments, and be aware of how your touch can affect the overall sound quality.



## Timpani Technique

Developing technique on timpani will involve working in three different areas: **stroke technique, pedaling technique and ear training**. The following concepts should help to develop a solid foundation in all of these areas. You will find that the grip and stroke concepts for timpani will have much in common with the 2 mallet keyboard grip and stroke. Even the roll speed concepts and touch concepts will be similar. The big differences are: timpani have a lot of natural rebound *and* they require a trained ear.

Timpani are also, essentially, a solo instrument. This will require the timpanist to be confident and "play to be heard." In other words, they need to have the "vibe" of a soloist. This will be developed over time as the timpanist develops technically and musically. This positive and confident attitude should also translate to how they care for and maintain their instruments (see page 93).

## BODY POSITION/POSTURE

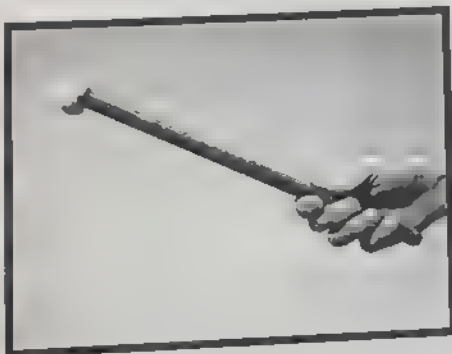
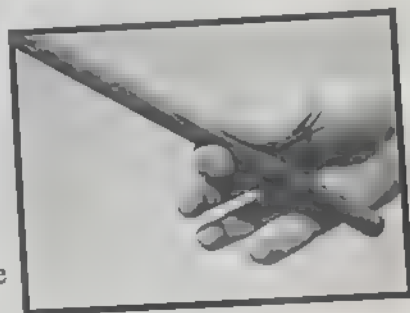
1. Due to the abundance of difficult pedaling passages in many marching band and drum corps shows, most timpanists **prefer to sit**.
2. Make sure you have a **stool that is high enough**; most drum set stools *will not* do the job. The timpanist's waist should be close to the height of the rims of the drums.
3. The drums should be set around the timpanist so the **pedals are within comfortable reach**. Also check to make sure the mallet heads will land comfortably in the proper playing zone of the drum (about 1/3 of the way from the rim).
4. Try to **avoid leaning over the drums**, except when tuning. This will cause serious back strain. If this is an issue, your stool is adjusted too high.

As with any other percussion instrument, **avoid tension** in other parts of your body. Besides the obvious muscles that will be involved with playing (wrists and fingers) some other common tension areas are shoulders, elbows, neck, and yes, even the face. Relax!

## BASIC TIMPANI GRIP

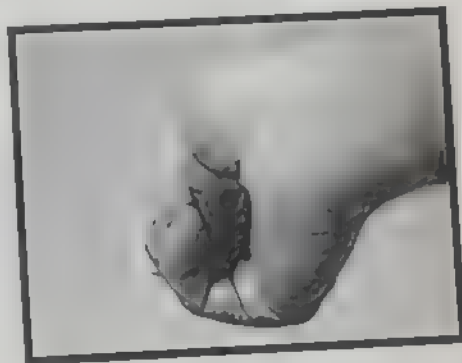
The timpani grip has many of the same characteristics as the basic two-mallet grip. It also revolves around the concept of a relaxed and natural hand position. If you let your hand hang by your side you'll notice the natural curve of all your fingers. Keep this look in mind as you go through the following setup:

Place the mallet between the **first knuckle of your index finger** and the **pad of your thumb**. This is a very important contact point as it is the **fulcrum, or pivot point**, of the mallet. Start with your fulcrum **one-third of the way up the mallet shaft**. Unlike keyboard playing, seldom will you choke up on the mallet.



The **other fingers** should wrap around the mallet in a curved and relaxed manner.

Leave a little space between the mallet shaft and the palm of your hand. This will help to relax your stroke and allow you to use the natural rebound.



When your hands are set and ready to play, your **palms will face each other** with your thumbs facing up. This should be a relaxed position. The **mallet shafts** will be close to parallel and the **mallet heads** will be from 6 to 8 inches apart.

## THE TIMPANI STROKE

As you as strike your first notes on the timpani, remember that you *must* continue to follow all of the above advice for body position and grip.

Due to a slightly different hand position, the timpani stroke is just a bit different from the keyboard stroke. Imagine you are turning the doorknob on a door, screwing in a light bulb, or turning a screwdriver. You will notice that you are **rotating your entire forearm**. This is the basis of the timpani stroke. Combine this with a little bit of motion from your back three fingers (especially the middle finger) and you have it. Practice this away from the drums for awhile until you get the hang of it. Then move on to the following pointers.

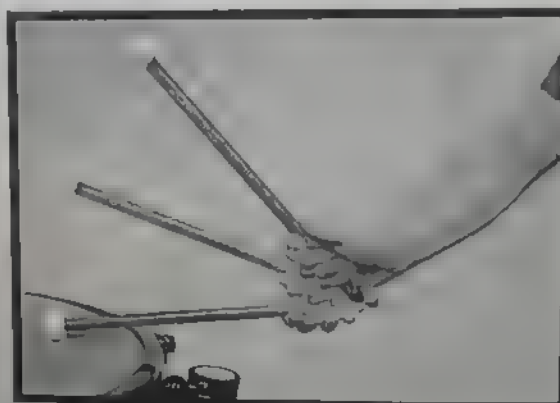
Play this exercise while keeping the following pointers in mind:

R R R R R R R R L L L L L L L L

R R R R etc... L L L L etc...

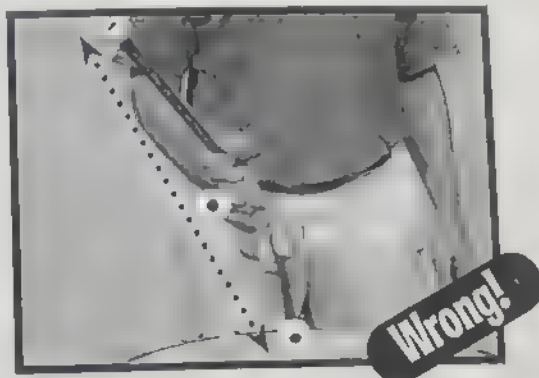
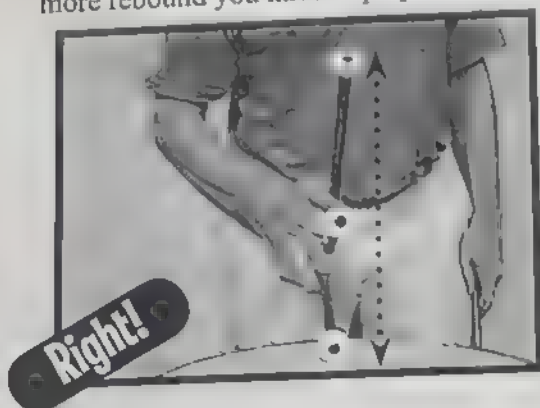
1. Like the keyboard players, start with your mallets in the "up" position. They should be at the height that you want to play each stroke of the exercise.

2. Play with a **continuous** and **relaxed** forearm rotation (with some help from the fingers). This is the **legato** stroke. The fulcrum should stay firm while the back three fingers relax and move with the stick. Again the stroke is mostly forearm rotation at this point, not fingers. The back three fingers can contribute more for rolls and lower dynamics. Don't forget, the **playing zone** is about 1/3 of the way from the rim to the center.





**3.** The timpani have as much or more natural rebound than any other percussion instrument. Use this to rebound back to your starting position. This is the rule that is most often broken! Remember, the more *relaxed* energy you put into the stroke, the more rebound you have to play with.



**4.** Make sure that your **mallet paths** are straight up and down. You don't want any sliced strokes or ellipses; these are very inefficient and inaccurate strokes. This will be especially important when you start to roll.

**5.** Make sure that your **arms and elbows** stay **relaxed** during this whole process. They should not contribute to the stroke motion. These "arm" strokes are very inaccurate and harsh sounding. *Rotate* from the elbow, don't *lift* from the elbow. This is another rule that is often broken.

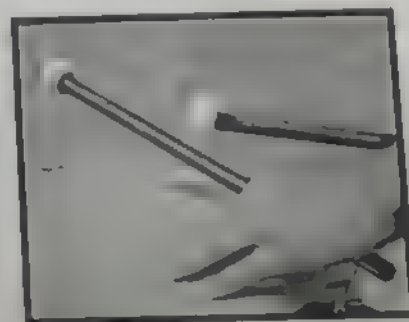


**6.** Strive for a **consistent sound** between each note on each hand. This will require a consistent firmness between your fulcrums, a consistent velocity of the mallet, a consistent playing zone on the head, a consistent height of the stroke, and striking with the same part of the mallet head each time.

**7.** If a hand is not playing it should stay relaxed and in the "up" position.

**8.** All the **concepts of "touch"** on page 109 will also apply to the timpani. By adjusting the firmness in your fulcrum you can produce a variety of articulation qualities with each set of mallets. For example, if you play with a firm fulcrum with a softer set of mallets, you can still articulate fast passages on a larger drum. You don't need to go to a harder mallet unless you want a brighter sound.

**9.** Like the vibraphone or chimes, the timpani have a long sustain. You must learn to control the length of the sound by **dampening**. To dampen, place your finger tips on the playing zone of the head. This may take some coordination at first, but dampening is an essential element of playing timpani.



## SINGING AND EAR TRAINING

If you want to play timpani you have to sing and train your ear; there is simply no way around it. Unfortunately, singing and drumming are usually not a great mix. This stems from the fact that most young percussionists' training revolves around playing rhythms on a pad. They need to sing more at a younger age and get involved with melodic instruments earlier in their careers.

There is no mystery to developing your ear. You need to practice every day. You also need to get over feeling uncomfortable singing in front of people (anyone who has taken freshman sight-singing in college knows what that's all about). Support your breath, like a wind player, and go for it!

Here's a daily singing routine. It takes 10 – 15 minutes and it will change your life:

1. Start by **matching pitches** in your voice range. Sit at a piano or keyboard instrument and play a note, try to hear the pitch in your head first, then sing. If you can get the pitch on the first try, without "scooping up" to it like a country singer, you're doing well!
2. Now move on to **scales**. You can sing along with the piano at first, but try to progress to just getting the starting and ending pitches from the piano. You don't need to sing through all of your scales. Find a few that fit nicely in your voice range and perfect them. Try singing scales in major and all forms of minor (natural, harmonic, and melodic).
3. Finally it's time to work on **intervals**. You can start by combining this with your scale singing. Start with the first note of the scale and sing up to the second pitch, back to the first, then skip to the third and so on. Try this in an ascending and descending manner. Now, try to progress to the point of being able to start on any scale note and sing any of the others. When you perfect this, try to learn the intervals of the non-scale notes. For example, try to sing an F-sharp in the key of C major. This will take a while to perfect, be patient. Mastery of intervals will lead to success on the timpani. For more information on the main intervals, review the "theory" section of the appendix on page 220.

## TUNING AND PEDALING

After you have a good grasp on matching pitches and singing intervals, it's time to start to tune the drums and play. Here are some pointers for successful tuning and pedaling.

1. There are several ways of checking the pitch of the drums. Start by getting your ear close to the head. Try to do this by balancing yourself on the stool, not by holding on to the rims or heads with your free hand. To hear the pitch some people **tap the head** with their fingers, some tap the head very lightly with a mallet, and some sing their desired pitch into the head (the drum will resonate when the head is in tune). There are great performers who swear by all of these methods, but tapping the head with the mallet tends to give the truer pitch of the drum. Sometimes when you tap with your finger it's hard to hear the fundamental pitch of the drum, and singing the pitch can be very difficult when other pitches of the ensemble are interfering and possibly making the drum resonate.
2. Always **tune from low-to high**, scooping up to the pitch. There's no real science in explaining this, other than common sense. When tuning down from high to low, you are releasing tension on the head. Some of that tension may still remain where the head contacts the bearing edge of the bowl. Then, once the head is struck with a mallet, that "stuck" tension is released, and will result in a pitch that is flat. In tricky pedaling passages (i.e. a descending, pedaled line), a good timpanist will know to compensate for this by not moving the pedal down quite as much.
3. Related to the above tip, if you have **tuning gauges** on your drums, use them only as a gauge (pun intended). It's very tempting for timpanists, especially less-experienced players, to rely on these devices. They are never 100% accurate. More often than not, they're inaccurate. There is no substitute for a good ear.
4. **Listen to the ensemble.** The best reference of how "in tune" you sound is to check it against the band. Even if you think you are right with your pitch pipe, if it's not in tune with the band, it's out of tune! Realize that the pitch of the ensemble *will* change throughout the performance. Just because you're in tune at the beginning, doesn't mean you'll be in tune at the end. Be prepared to constantly adjust the pitch.
5. There are times when you have to **pedal passages without time to check the pitches**. Passages that require this kind of pedaling should be worked out extensively. When pedaling through sequential notes on one drum, avoid the "trombone effect" by moving the pedal in a quick motion, at the last possible instant. It sometimes helps to feel as if your foot and hand are playing a "flam," making the foot the grace note, and the hand the actual pitch. As always, make sure you can sing the passages first.



## Important Concepts

Before we dive into the exercises, here are some important concepts and practice suggestions.

### Legato Stroke

In this case, the word legato refers to **the look of the stroke** (smooth and connected) rather than the sound that it produces. This style of stroke requires the same speed on the downstroke and the upstroke. This is an excellent general purpose stroke and will be used for most of the exercises.

### Piston Stroke

The piston stroke has no noticeable "prep" before the downstroke or added lift after the rebound (you rebound back to where you started). By removing the unnecessary movement of the mallet, we have created a more efficient and accurate stroke. This stroke requires a downstroke that accelerates and an upstroke that decelerates (like dribbling a basketball). There should be a **noticeable pause between strokes**. The piston stroke is excellent for slower passages that demand the utmost accuracy and for practicing double verticals and shifting.

### Shifting

Shifting is the movement from one tone bar to the next. The shift occurs **during the rebound of the stroke**. As the mallet is rebounding off of the tone bar, it should move in a smooth arc and stop directly over the next tone bar to be struck. If the shift occurs too late (after the rebound), your arc will be "squared off." Efficient shifting will lead to greater accuracy and consistency.

### Ideo-Kinetics

This fancy word means that you use your muscle-memory, or kinesthetic sense, to play notes outside of your field of view. This is a great tool to improve your sight-reading ability and accuracy during demanding passages.

### Flow

This is the ability to combine the above concepts and guidelines into one fluid idea. This will allow you to see and experience the "bigger picture" in music (musical and rhythmic phrases, dynamics and expression). This is a big part of becoming a great performer.

### Playing Zone Suggestions

As noted in chapter 2: For exercises that require a lot of movement and speed, try

to play in the middle of the bar for the natural notes and on the edge for flats and sharps.

When you play on the edge of the bar, try to play on the angle of the bar, as if you're slicing the mallet head

in half. Playing on the center and edge will allow for maximum speed and fluidity. For other exercises, such as the Modular Four-Mallet Exercises, which don't require a lot of movement and speed, play in the middle of the bars for the majority of the time. Ultimately, this is the choice of the instructor. Try to take each musical situation as it comes and then decide what will allow you to play with the most fluidity and the most consistent sound.



## Natural Phrasing

The rule of **natural phrasing** says that when the musical line is ascending (going up), a natural crescendo will occur. On the flip-side, when the musical line is descending (going down), a natural diminuendo will occur. This is a **good general rule**. If you are going to apply this method, it's best to know that it's **most effective when used subtly**. This will prevent you from waking up in a cold sweat, having nightmares about scales being rehearsed over and over again from pianissimo to fortissimo, up and down, up and down. This "exaggerated method" is so extreme that it sounds like a two year old playing with the volume slider on a home stereo. Phrasing should be subtle, natural, and compliment the music. Here's an example of a very basic scale exercise that will help illustrate this concept.

### The "volume slider" approach (what to avoid):



You will notice how extreme the dynamics change in such a short amount of time. Granted, there may be musical situations where this is necessary, but more often than not, the benefit here would simply be for a **brief effect**. Be careful not to refer to this technique as "phrasing." It will develop habits in players that will be anything but musical.

### A more natural approach (to reinforce the direction of the line):



Obviously, this approach makes the "dynamics" much more subtle. Another good exercise is to sing the phrases to the performers, have them sing them back, then play them on the keyboards. If you can sing it with the right feeling behind it, there's a good chance that same energy will transfer from your brain to your hands. This can be a very powerful teaching tool.

**Avoid!**



*Doooh...so emotional!*

## Fake Expression

We've all seen it at marching band and drum corps shows: the fluffy arm motions, bobbing up-and-down with the dynamics, the over-emoting which looks so contrived. It's amazing how often you *still* see this. **We must unite and put an end to this!**

Seriously though, it seems that somewhere along the way, somebody decided to "define" how to express the music in an attempt to try and unify the pit's technique, or possibly to "emote" further up into the press box where the judges sit. Frankly, musical expression is an intangible subject, and largely depends on what piece of music is being played. If everyone looked the same, and felt the same when making a musical statement, chances are they wouldn't actually be "saying" anything at all. It would be like watching trained animals.

## Herein lies the problem

On average, players are much better today than they were 10 years ago. They should be allowed to play the instruments in an appropriate manner without sacrificing technique, sound, or good musicianship simply because it's marching band. You may then ask, "Well what if I don't have experienced players?" Chapters 2 and 3 are the answer to that question. Nothing will instantly make less experienced players more experienced. However, if they are trained from the early stages how to take a relaxed approach, focusing on solid fundamentals, they will stand a much better chance of becoming expressive musicians. As a pit instructor or band director, it's your responsibility to train the players in an appropriate manner. You will score more points in the long run.

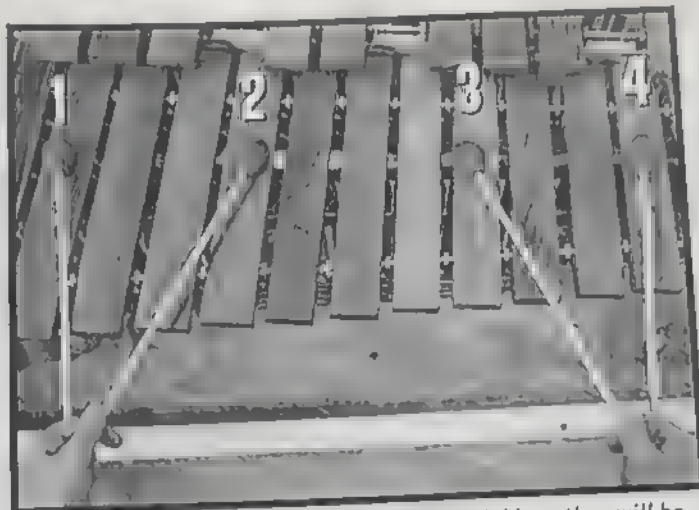


## Practice Suggestions

The following suggestions will allow you to practice the exercises more effectively and they will give you some ideas for adding variety to your practice routine.

1. **Set goals** for what you want to accomplish in each practice session. It will only take five minutes and it will help you greatly. Realize that most exercises are not just about hitting the right notes, they're about mastering a certain concept (perhaps fluidity, or consistency of sound). Achieve the concept and the notes will follow!
2. **Practice with a metronome.** Remember, that sometimes the slow tempos can be equally as challenging as the blazing fast ones.
3. Work first at getting a perfectly **consistent sound** between your hands. This will require you to be consistent with the height (dynamic) of the strokes, the playing zones, the part of the mallet you're using, and the amount of firmness in your fulcrum (touch).
4. When you feel you've achieved a consistent sound between your hands, start to **vary the dynamics**. You may want to play the entire exercise at a different dynamic, or try shaping with the direction of the musical line (natural phrasing) or do the opposite. Also, try adding various accent patterns. Be creative! You'll find that different dynamics and accents will provide a whole new challenge. **Now you are practicing making music!**
5. **Vary the color** of your sound. Use different playing zones to create brighter or darker sounds. You can change the color during the course of the exercise or, with four mallet exercises, have one hand be bright and one dark. This combined with a variety of dynamics will create a host of interesting options.
6. **Get everyone involved.** Add timpani parts to the exercises. This will help to develop the timpanist's ear and give them a chance to work on their special technical needs (intonation, pedaling, rolls, articulation). For players who are not yet technically proficient at keyboards, have them play concert snare drum or write an accessory part.
7. **Be efficient away from the keyboard.** There are a ton of technical issues that you can work on if you don't have access to a keyboard. You can work on four mallet issues such as shifting, stroke types, and interval changes. Most of all, you can get out a pad and sticks and just "chop out." A proficient keyboard player with a "drummer's instinct" is a wonderful and rare thing.
8. If you're tired of playing one exercise – **move on!** You can come back to it down the road. Also, don't be afraid to **create your own exercises.**

Don't forget, exercises are designed to make you better at conveying musical ideas. So don't go crazy and practice technique for 15 hours; apply it to your music. Of course, the opposite is also true. You won't be able to achieve all of your musical goals without a solid technical background.



*In this book, when referring to 4-mallet stickings they will be numbered as illustrated, left to right, 1-2-3-4.*

## Singles

This exercise was designed to isolate and develop the legato stroke. Strive for smooth motions and a consistent sound. You can start with major or minor scales and then move on to any mode. Try this exercise with a variety of dynamics and accent patterns. When you are comfortable playing it with two mallets, try it with four (using any combination of stickings).

$\text{♩} = 70 - 200$

Keyboards

Timpani

*r r etc*

*r r etc*

*1 1 etc*

*1 1 etc*

*r*

*r*

## Sixteenth Note Scales No. 1 & No. 2

No. 1 is a classic that has been heard in parking lots and practice fields all over the country. No. 2 has a slight variation that adds a bit of flavor. The first bar (the check bar) should be used to check the consistency of sound between the hands. This should be one of the main goals of this exercise! To help with this, try to position the mallet heads so they both land in the center of the playing zone. Make your paths from note to note as small as possible (playing on the edges of accidentals) and as smooth as possible. Remember to add shape and accents. You can start with major and minor scales, then move to any mode. You can also practice this with four mallets (using the inside mallets). Honestly, most people try to play this exercise too fast! Don't go beyond your ability to play with a consistent and full sound.

### Scales No. 1

$\text{♩} = 60 - 190$

Keybds.



## Scales No. 2

$$\mu = 60 - 190$$

The musical score for 'The Merry-Go-Round' is presented in three systems. The first system includes a tempo marking of 60-190 and a rhythmic pattern: R L R L or L R L R. The notation features a treble clef for the piano and a bass clef for the tympani, both in 4/4 time. The melody is characterized by eighth-note patterns, while the accompaniment consists of quarter notes. The second and third systems continue the piece, showing the piano part with more complex eighth-note runs and the tympani providing a steady quarter-note accompaniment.



## Accent Exercises and Stick Control Exercises

Depending on your background, this is where things may get interesting. Many keyboard players who did not come from a "drumming" background may have never been exposed to these concepts, yet they are

very important skills to have. Try practicing all of these exercises away from the keyboard, on a drum, or pad, with sticks. These exercises can be played with 2 or 4 mallets. There is no need to play them in different keys.

### 16th Note Accent to Tap

The focus of this exercise is achieving a consistent sound at two different dynamics. First, focus on getting the unaccented notes to be consistent. You may want to start by playing the whole exercise at *mp* to get an idea of what this will sound like. Getting a good sound at the lower dynamic may require a firmer fulcrum (see section on "touch" on page 109). The accents should not be a faster, harsher stroke; they should simply be a higher stroke. This will keep the quality of sound the same for the accented and unaccented notes.

♩ = 65 - 112

Keyboard

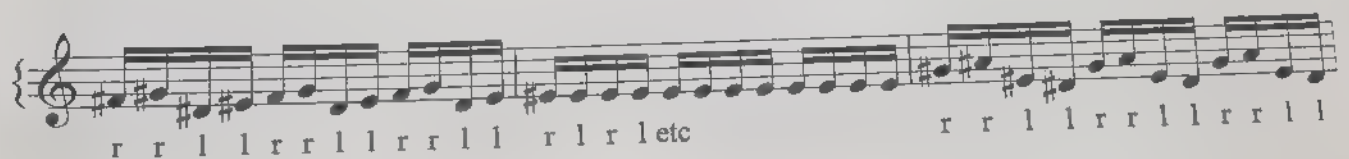
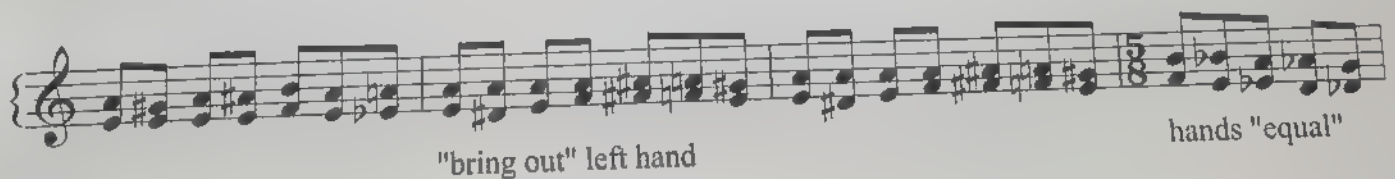
Timpani

## Stick Control

This exercise focuses on many "real world" issues. First, it focuses on getting a good double-stroke, but notice that the double strokes are always on two different pitches. This stroke is a necessity (look at ragtime music or *Porgy and Bess*, for example). Make sure you hear no difference in rhythm between the alternating bars and the double-stroke bars. Keeping a relaxed legato stroke throughout will help with this. The next stick control issue is in the  $\frac{7}{8}$  section. Here you must "bring out" or raise the dynamic of each hand. You can accomplish this by firming up the fulcrum and playing a faster stroke or by simply raising the stroke height of that hand. Either way, you need to avoid flams.

$\text{♩} = 70 - 130$

Keyboard {  r l r l etc r r l l r r l l r r l l r l r l etc

 r r l l r r l l r r l l r l r l etc r r l l r r l l r r l l
 r l r l etc r r l l r r l l r r l l "bring out" right hand
 "bring out" left hand hands "equal"



## Yak-scents

This exercise combines the ideas of the two previous exercises. If you focus on achieving consistent sounding unaccented notes and play with accurate rhythms, this exercise will groove! There are two other fun ways of playing this exercise. Split your group in half. Have half of them play sections A, A, A, B and have the other half play sections A, B, A, A. Next try it in a round. Have the first group start the exercise as is, then the second group starts at the beginning when the first group gets to bar 3. This is a great listening exercise and a great way to check rhythmic accuracy.

**A**

Keyboard  $\text{♩} = 70 - 136$



R | r | r | r | r | R | r | L | r | r | r | r | R | R | R | R | R | r | L | r | r |



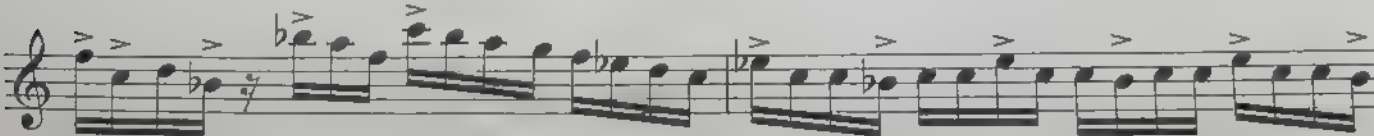
r | L | r | L | r | r | L | r | L | r | r | L | r | L | r | r | L | R | r | r | L | r | r | R | L | L |



R | R | R | R | R | R | R | R | R | r | r | R | r | r | L | R | r | r | L | R | r | r | r |

**B**


R | r | r | r | r | L | R | r | r | r | r | r | L | R | L | r | L | R | r | R | r | r | r | r | r |



R | L | r | L | R | r | r | R | r | r | r | r | r | r | R | r | r | L | r | r | R | r | r | L | r | r | L |



r | r | L | r | L | r | r | L | r | L | r | r | L | r | r | L | r | r | L | R | r | r | L | r | r | L | R |

### Summertime...

This exercise was written in 1993 for Star of Indiana's pit. The original intent of the exercise was to replace the endurance exercise called 6-3-2-1 (if you are not familiar with this exercise you are probably better off). The object is to keep repeating the exercise and increase the tempo slightly with each repetition. At first this exercise was performed with two mallets, though as the Santa Clara Vanguard pit found out in 2000, this makes for a very demanding four mallet exercise as well. To master the four mallet version, start by playing the exercise, as written, with one hand. When this is mastered, play the exercise in octaves with two hands. Go slowly! Correct pitches, quality of sound and proper technique are paramount. This exercise should only be played in the original key.

$\text{♩} = 60 - 132$

Keyboard

The musical score for the 'Summertime...' exercise, Keyboard part, consists of five staves. The first staff is in 6/8 time, key of D major (one sharp). The second staff continues in 6/8. The third staff changes to 2/4 time. The fourth staff changes to 6/8 time. The fifth staff ends with a double bar line and a fermata over the final note, marked with an 'R'.

### Octave Jumps

This is an accuracy exercise. Whenever accuracy is the goal, you must play slow enough to not only strike the correct pitches, but to train your muscles to memorize these paths. The more often you play the correct notes, even under tempo, the more likely you are to succeed when the tempo increases. As with Summertime, this exercise does not need to be played in other keys.

♩ = 65 - 152

Keyboard

The musical score consists of seven staves of music for keyboard. The notation includes various rhythmic values such as eighth, sixteenth, and thirty-second notes, as well as rests. The key signature changes across the staves, including D major, C major, and B-flat major. The exercise is designed to improve accuracy through repeated practice of specific pitch paths.



## Arpeggios

This exercise is a study of chord inversions (the same chord tones in every possible order). This page only illustrates four keys, but you should ideally play through all of the keys (chromatically, as indicated). You can also experiment with any chord quality (major, minor, diminished, etc)

♩ = 60 - 148

Keyboard A

Keyboard B (n 1st inversion)  
(optional)

The musical score consists of four systems, each representing a different key: C major, G major, D major, and A major. Each system contains two staves. The top staff of each system is labeled 'Keyboard A' and the bottom staff is labeled 'Keyboard B (n 1st inversion) (optional)'. The tempo is indicated as ♩ = 60 - 148. The exercises are written in 4/4 time and consist of ascending and descending arpeggios for each chord inversion. The first system is in C major, the second in G major, the third in D major, and the fourth in A major. The notation includes sharp and flat accidentals to indicate the correct notes for each key.

## Inverted Arpeggios

This exercise uses the same basic concept as the previous *Arpeggios* exercise, but it works through a chord progression instead. If you want to play this in different keys, you may want to take the time to write out the chord progressions first (see theory appendix; page 220). Start with two mallets for both of these exercises, then move to four. With four mallets, you can play the exercises with the inside mallets (2 and 3), or you can try this sticking: 1 - 2 - 3 - 4.

[illegible]

F  
 L *sim...*

A musical score for a piece titled "Fm". The score is written on two staves, both in treble clef. The key signature has one flat (B-flat), and the time signature is 4/4. The melody is characterized by eighth-note patterns, often beamed in pairs. The first staff begins with a treble clef and a key signature of one flat. The second staff continues the melody. The piece concludes with a double bar line.

Musical score for "The Rose Tree" in C minor (Cm). The score is written for a piano accompaniment, featuring a treble staff and a bass staff. The melody is primarily in the treble staff, while the bass staff provides a harmonic accompaniment. The key signature is one flat (Bb), and the time signature is 2/4. The piece begins with a treble staff and a bass staff, both containing a single note (C4) in the first measure. The melody in the treble staff consists of a series of eighth and sixteenth notes, while the bass staff provides a steady accompaniment of eighth notes. The piece concludes with a final chord in the treble staff.

Cdim7

Two staves of music for the Cdim7 exercise. The first staff contains measures 1-4, and the second staff contains measures 5-8. The key signature has three flats (Bb, Eb, Ab). The melody in the first staff consists of eighth and sixteenth notes, while the bass line in the second staff consists of quarter notes.

Two staves of music for the Cdim7 exercise, measures 9-12. The notation continues with eighth and sixteenth notes in the melody and quarter notes in the bass.

Cm

Two staves of music for the Cm exercise. The first staff contains measures 1-4, and the second staff contains measures 5-8. The key signature has two flats (Bb, Eb). The melody in the first staff consists of eighth and sixteenth notes, while the bass line in the second staff consists of quarter notes.

Fm

Two staves of music for the Fm exercise. The first staff contains measures 1-4, and the second staff contains measures 5-8. The key signature has four flats (Bb, Eb, Ab, Db). The melody in the first staff consists of eighth and sixteenth notes, while the bass line in the second staff consists of quarter notes.

G

Two staves of music for the G exercise. The first staff contains measures 1-4, and the second staff contains measures 5-8. The key signature has one sharp (F#). The melody in the first staff consists of eighth and sixteenth notes, while the bass line in the second staff consists of quarter notes.

C Maj

Two staves of music for the C Maj exercise. The first staff contains measures 1-4, and the second staff contains measures 5-8. The key signature has no sharps or flats. The melody in the first staff consists of eighth and sixteenth notes, while the bass line in the second staff consists of quarter notes.



## **Modular Four Mallet Exercises**

These basic exercises are your starting point for developing four mallet technique and coordination. Though they may look simple, don't underestimate the usefulness of these exercises! They are meant to pinpoint specific technical problems. Start by playing each exercise one hand at a time. When the exercise feels comfortable, cycle through the major and minor keys. Next try to play the exercise in both hands simultaneously (some of the exercises can be played one octave apart, others will need to be played two octaves apart).

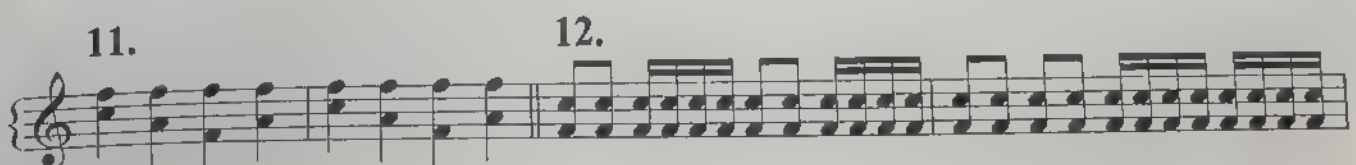
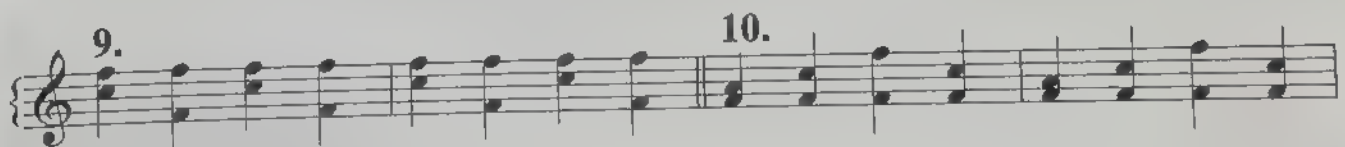
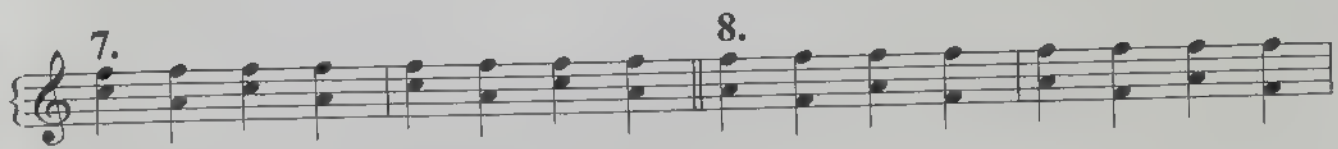
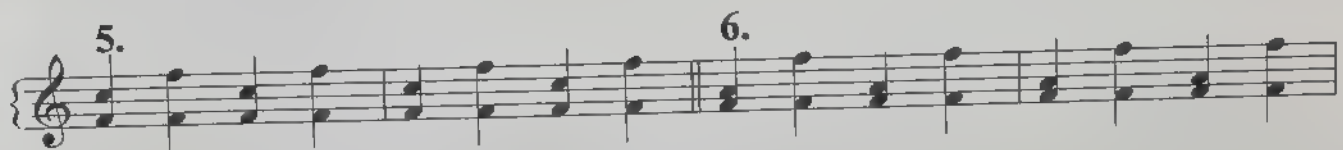
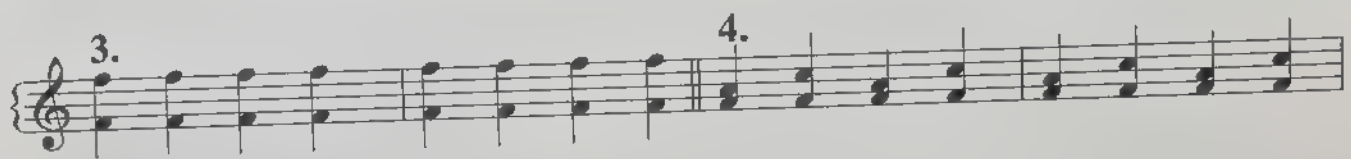
The next step is to try different exercises in your left and right hands. At first, start with two exercises from the same category (two vertical stroke exercises for example). Then try exercises from two different categories (a vertical and an alternating for example). Now the real fun begins. Next try adding different dynamics, accents, and timbres (bright or dark) in each hand. The combinations are limitless!

**Try to avoid the temptation of playing through many combinations without mastering them. Find a few combinations you like and stick with them for a few weeks.**



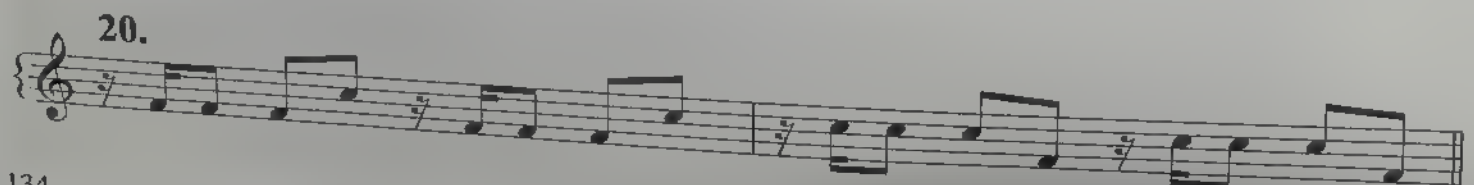
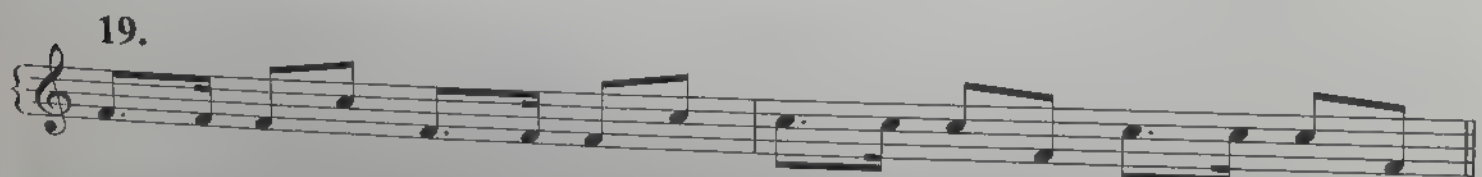
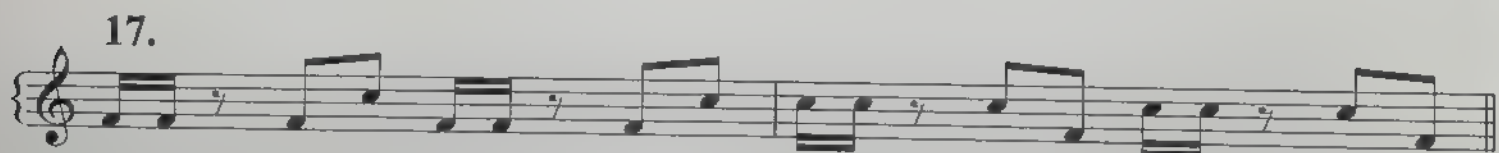
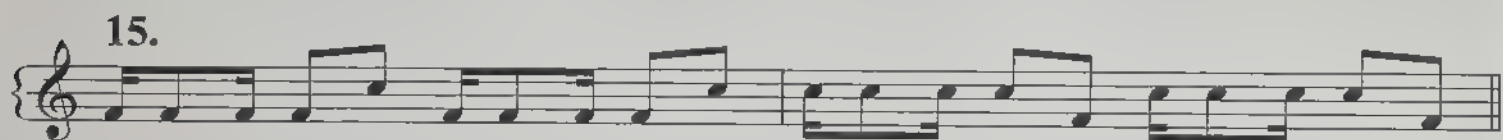
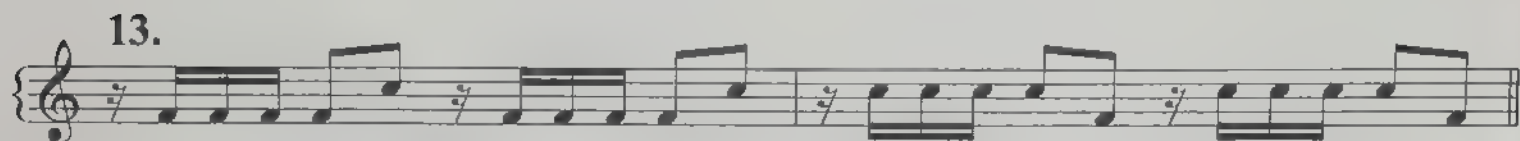
## Vertical Stroke Variations

Practice these slowly to develop the piston stroke, then slowly increase the tempo to work on the legato stroke. In either case, the wrist motion should be smooth and relaxed. Also make sure the elbow is relaxed. Avoid using an arm motion for the vertical stroke, particularly with octaves. Don't forget to focus on your shifting when you move through the keys or if the variation involves interval changes. If you are getting a "flam" sound with your vertical stroke, perhaps the mallets aren't "hanging" evenly. Review the four mallet grip concepts on page 104.

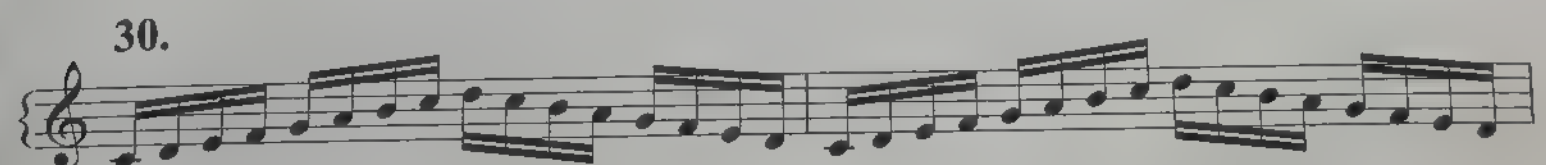
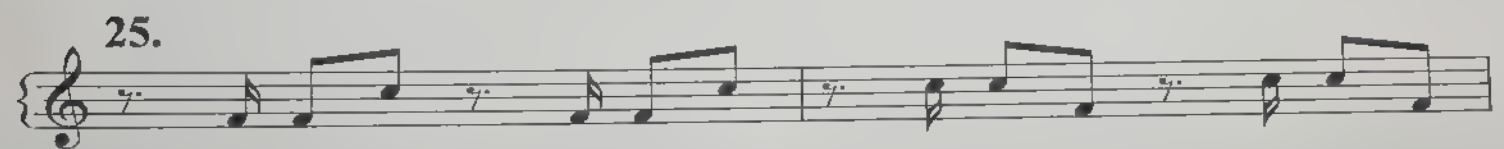
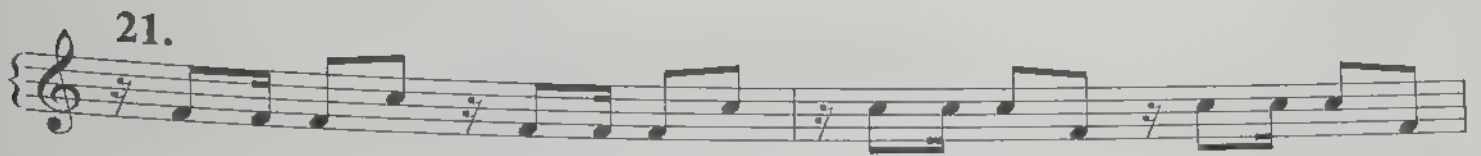


## Independent Stroke Variations

The independent stroke is a study in efficiency. If you play this stroke correctly, the unused mallet will simply rotate in place while the other mallet strikes the bar. Start by practicing this stroke slowly (in slow motion even), away from the keyboard. This will help your muscles to memorize the rotating motion. One key to getting the unused mallet to not shake or twitch while the other is in motion is to keep the hand completely relaxed. In other words, the fingers should not be "gripping" the mallets. This allows the hand to act as a **shock absorber**, which will provide smooth looking, efficient strokes. Start with variation 27, then, try playing through the rhythmic timing variations (13 - 26).

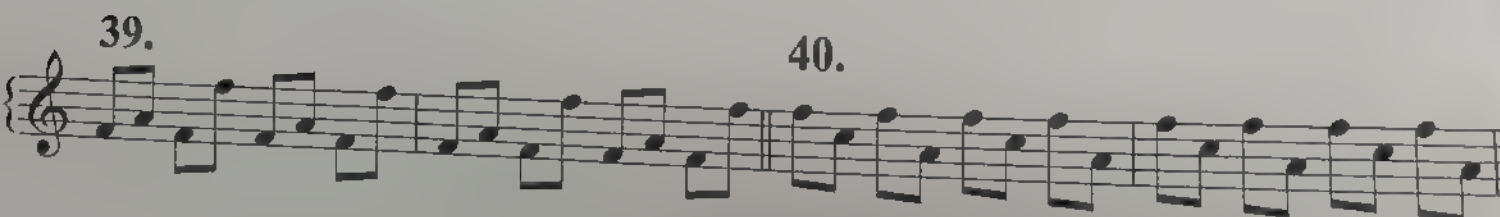
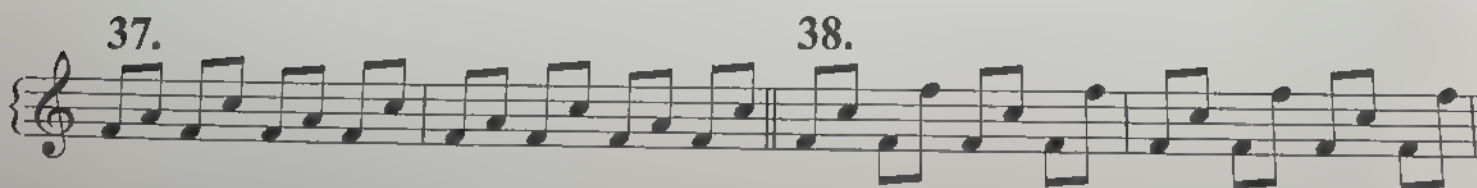


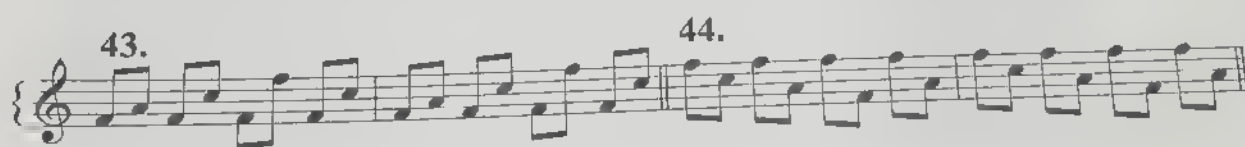




## Alternating Stroke Variations

Unlike the independent stroke, where the mallets move independently of each other, the alternating stroke is about team work. As one mallet strikes the bar, the wrist motion will force the opposite mallet to rebound. Again, a relaxed wrist and elbow are the keys to success. One myth about this stroke is that if you play it fast enough, you can develop an independent, or one-handed, roll. This, I'm sorry to say, is not true. If done correctly, this stroke style has a speed limit, it can only be played so fast. If you want to develop your independent rolls see pages 152-153.

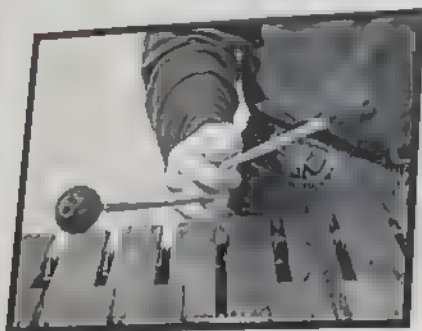






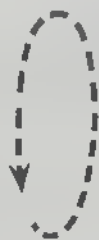
## Lateral Stroke Variations

This stroke is used for fast grace note passages and for lateral rolls (often called ripple rolls). This is perhaps the most difficult to perfect of all the stroke types. Essentially, the two mallets in your hand are going to play "follow the leader."



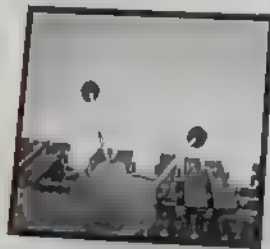
Start with an outside lateral stroke (that means the outside mallet strikes first). The mallets should be at a slight angle with the outside mallet slightly lower than the inside. Now begin the downward motion of a vertical stroke. When the outside mallet makes contact with the bar, the "follow the leader" begins as the inside mallet strikes immediately after. The outside mallet will hit the tone bar, rebound up, and go back down to its set position, the inside mallet will do the same exact thing a split-second behind. It should sound like a flam. The outside mallet is the grace note and the inside is the main note.

Most people who are new to this style of stroke forget to rebound the inside mallet. This will cause fluidity problems when you want to play several lateral strokes in a row (like when you're rolling). The **wrist motion is a very narrow oval shape**. Pretend you have a pencil where your inside mallet is (in the right hand) and you want to draw this shape.

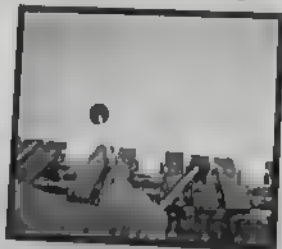


Keeping this shape in mind practice the motion in the air, then transfer it to the keyboard.

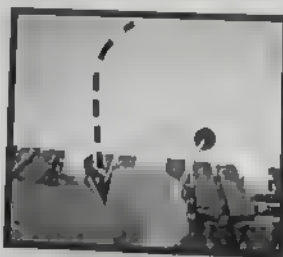
### anatomy of an outside lateral stroke (right hand)



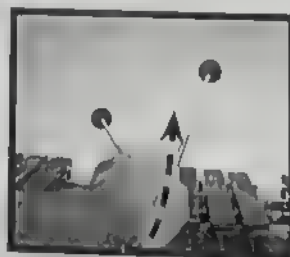
starting position



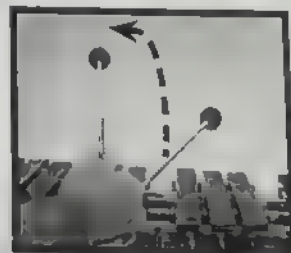
outer mallet strikes



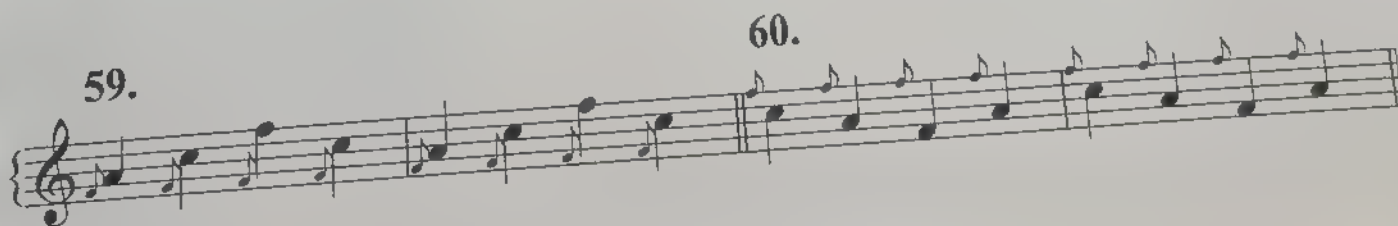
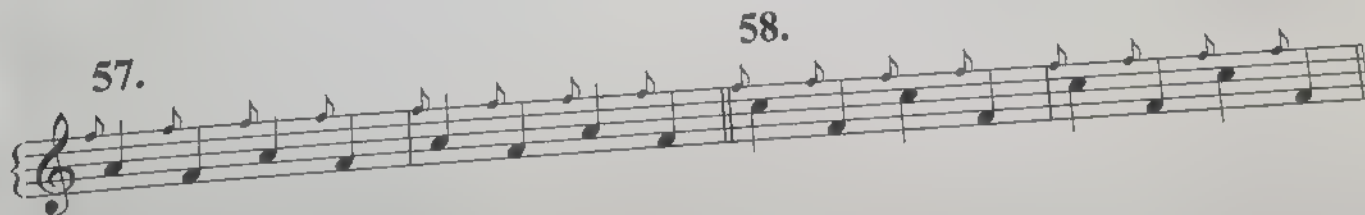
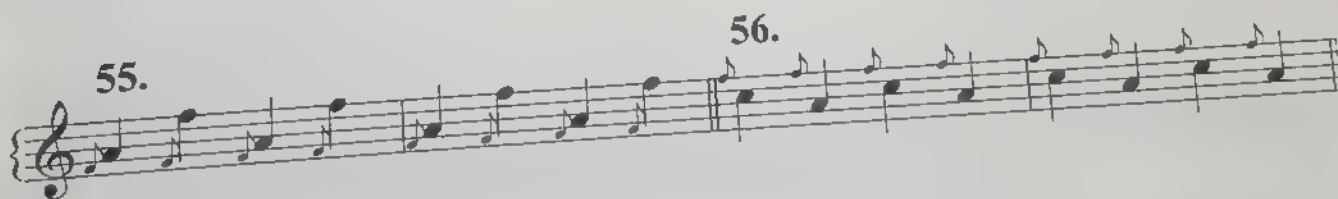
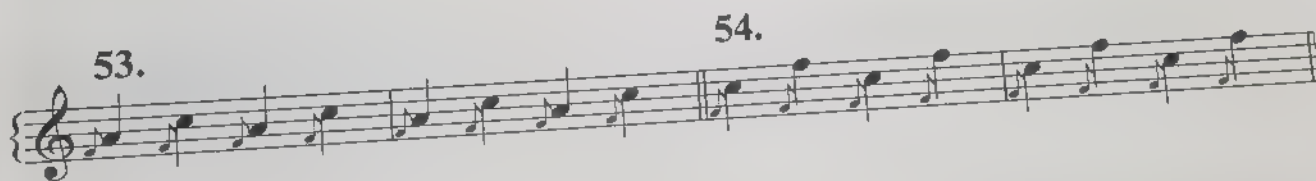
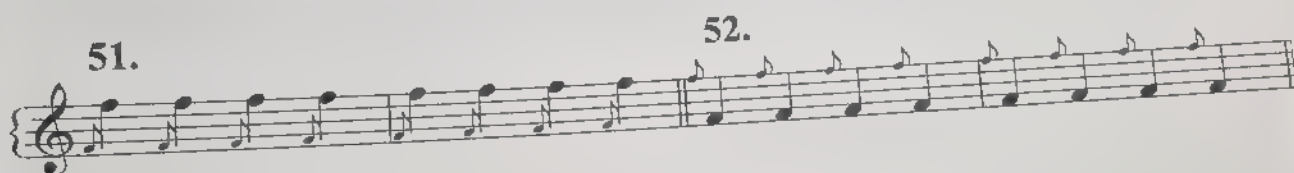
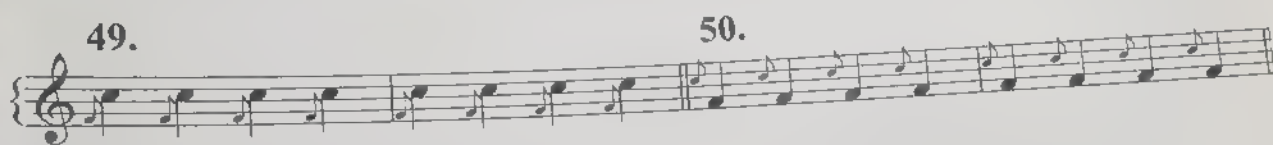
inner mallet strikes



follow through



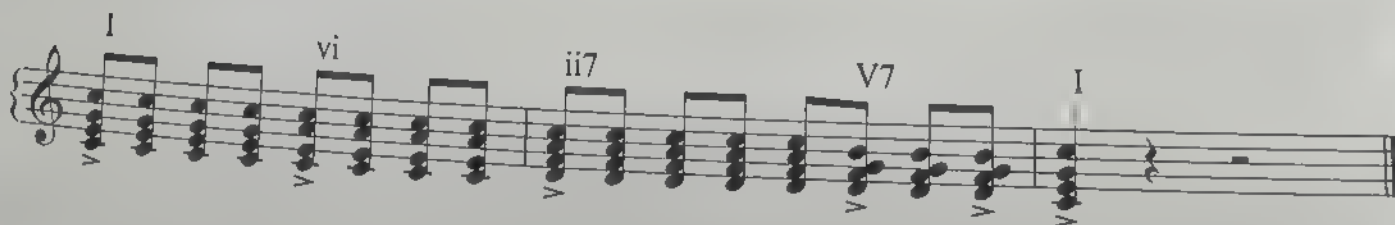
end of stroke



## Block Chord Accents

Now we will work on accents in a block chord setting using four mallets. As with the previous accent exercises, the performer should focus on playing the unaccented notes with a consistent sound. Again, the accents should be higher strokes, not faster, harsher strokes. **Make sure to play from the wrist**, with relaxed elbows; don't use arm strokes for this exercise. This exercise will also introduce another basic harmonic progression: I - vi - ii7 - V7 - I. For more on progressions, please refer to the basic theory appendix on page 220.

♩ = 80 - 152





### 4-Mallet Rotation

This exercise works on alternating strokes between the hands. Strive for a consistent sound and stroke height between each mallet. Relaxed wrists are the key. Next try the exercise with one of the other permutations (see page 144 after this exercise). If you experiment with different permutations in the marimba and vibe parts, as well as different accent patterns, you can create some very cool textures.

♩ = 80 - 152

Vibraphone

Marimba

Measures 1-3 of the exercise. The Vibraphone part is in treble clef with a key signature of one sharp (F#). The Marimba part is in bass clef with a key signature of one flat (Bb). Both parts play a continuous eighth-note pattern.

Vib

Mar

Measures 4-6 of the exercise. The Vibraphone part continues the eighth-note pattern. The Marimba part continues the eighth-note pattern.

Vib

Mar.

Measures 7-9 of the exercise. The Vibraphone part continues the eighth-note pattern. The Marimba part continues the eighth-note pattern.

Vib

Mar

Measures 10-12 of the exercise. The Vibraphone part continues the eighth-note pattern. The Marimba part continues the eighth-note pattern.

UP FRONT - Section 3: Exercises

13

Vib

Mar

Measures 13-15 of the exercise. The Vib part (top staff) and Mar part (bottom staff) are in 3/4 time. Measure 13 has a key signature of one sharp (F#). Measure 14 has a key signature of two sharps (F# and C#). Measure 15 has a key signature of one sharp (F#). The Vib part features eighth-note patterns, while the Mar part features quarter-note patterns.

16

Vib

Mar

Measures 16-18 of the exercise. The Vib part (top staff) and Mar part (bottom staff) continue the patterns. Measure 16 has a key signature of two sharps (F# and C#). Measure 17 has a key signature of one sharp (F#). Measure 18 has a key signature of one sharp (F#). The Vib part features eighth-note patterns, while the Mar part features quarter-note patterns.

19

Vib

Mar

Measures 19-21 of the exercise. The Vib part (top staff) and Mar part (bottom staff) continue the patterns. Measure 19 has a key signature of one sharp (F#). Measure 20 has a key signature of one sharp (F#). Measure 21 has a key signature of one sharp (F#). The Vib part features eighth-note patterns, while the Mar part features quarter-note patterns.

22

Vib

Mar

Measures 22-24 of the exercise. The Vib part (top staff) and Mar part (bottom staff) continue the patterns. Measure 22 has a key signature of one sharp (F#). Measure 23 has a key signature of one sharp (F#). Measure 24 has a key signature of one sharp (F#). The Vib part features eighth-note patterns, while the Mar part features quarter-note patterns.

25

Vib

Mar

Measures 25-27 of the exercise. The Vib part (top staff) and Mar part (bottom staff) continue the patterns. Measure 25 has a key signature of one sharp (F#). Measure 26 has a key signature of one sharp (F#). Measure 27 has a key signature of one sharp (F#). The Vib part features eighth-note patterns, while the Mar part features quarter-note patterns.

UP FRONT - Section 3 Exercises

24

Vib.

Mar.

27

Vib.

Mar.

34

Vib.

Mar.

37

Vib.

Mar.

40

Vib.

Mar.



## About 4-mallet "permutations"

Below are eight common permutations which all 4-mallet players should be familiar with. Simply put, a permutation is a **change in the order in which the mallets strike**. They each feel a little different, so it's a good idea to spend some time with each permutation. Slow repetitions will help to reinforce muscle memory. All of these permutations can be applied to the previous *4-mallet rotation* exercise on page 141.

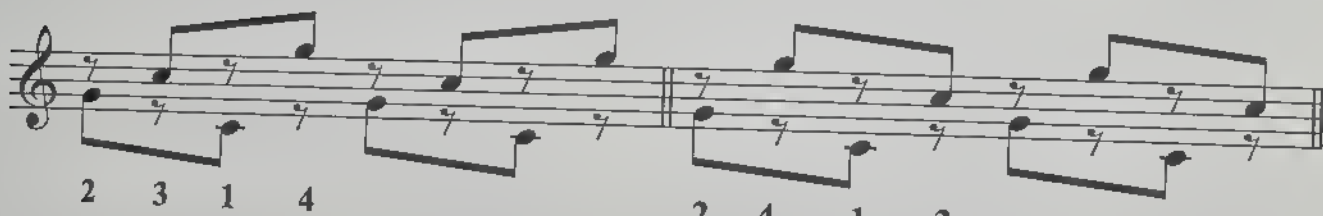
1



2

1 4 2 3

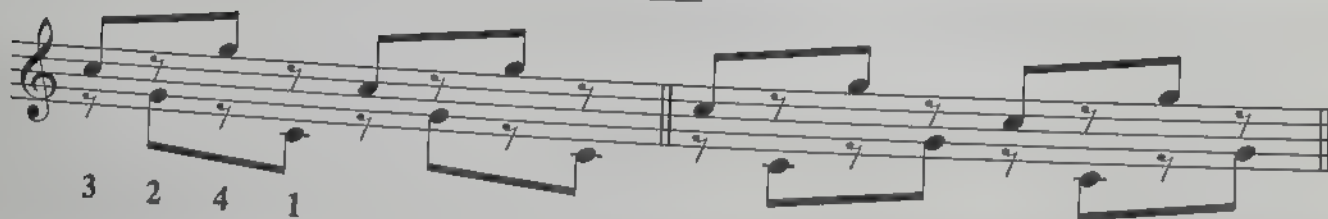
3



4

2 4 1 3

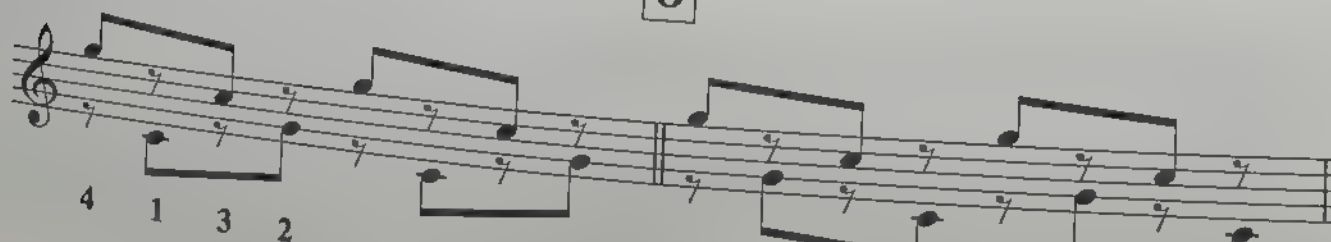
5



6

3 1 4 2

7



8

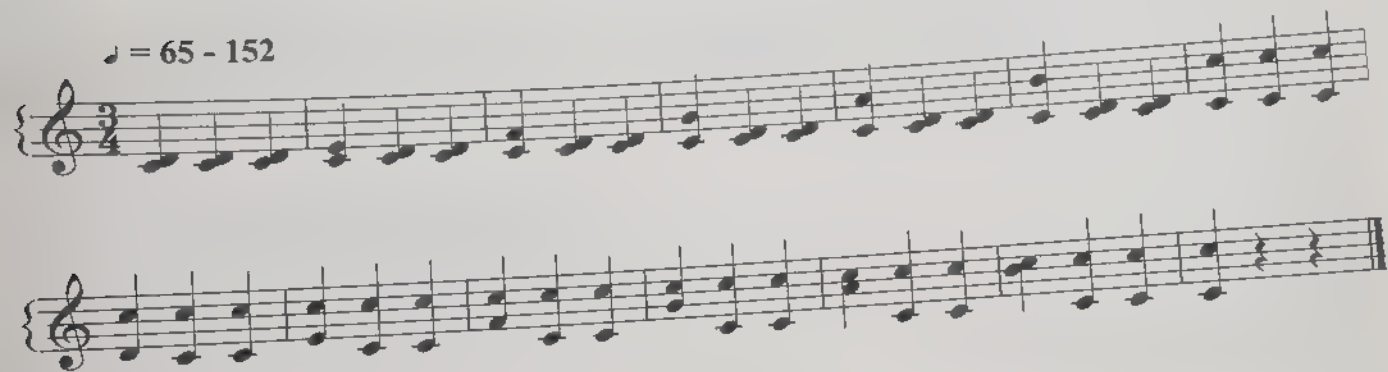
4 2 3 1

## Interval Control

These two exercises work four-mallet interval changes and shifting. Again, start very slowly using a piston stroke and focus on accurate shifts from note to note. The wrist motion must be relaxed and fluid. When you are comfortable with this, you can boost up the tempo or try these exercises in different keys.

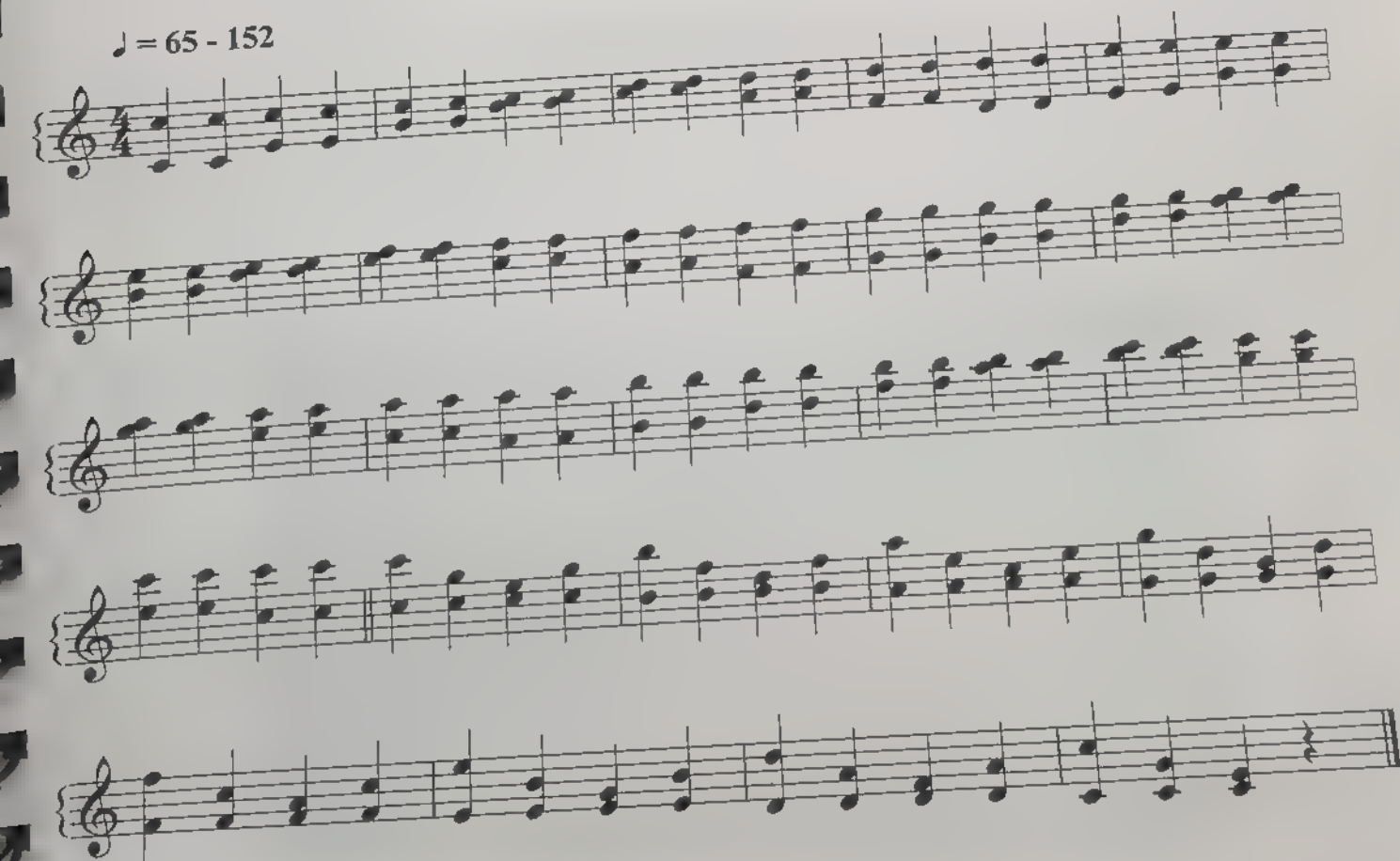
### No. 1

$\text{♩} = 65 - 152$



### No. 2

$\text{♩} = 65 - 152$



## Four Mallet Arpeggios No.1

This exercise is a great way to "get the hands going." Try to shape the exercise with natural phrasing (shaping with the direction of the melodic line), or in the opposite direction (diminuendo as you ascend and vice versa). You can play this exercise with a break in between each key, or you can go continuously through all of the keys (chromatically). This exercise can be done with any chord quality: major, minor, augmented, etc.

$\text{♩} = 110 - 165$

Keyboard

## Four Mallet Arpeggios No.2

This four-mallet exercise is excellent for working on small interval, alternating strokes. This stroke requires a combination of subtle forearm rotation and relaxed wrist motion. This exercise will also help to familiarize the performer with the I - IV - V7 - I chord progression. This chord progression is quite common in many styles of music. Measures 9 and 10 can be isolated as a separate exercise.

$\text{♩} = 65 - 180$

Keyboard

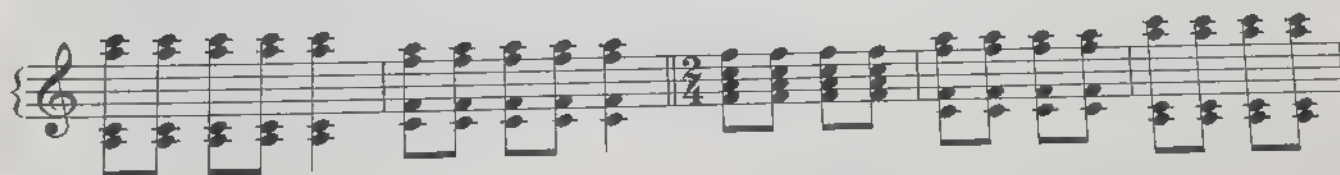


## Shifting

This is the ultimate shifting exercise. Because it has such a large range of notes, you will have to get on a 4.3 octave marimba to get through all of the keys. Some keys, like B-flat major, are physically difficult to perform. Stick with it! Good footwork will also contribute to striking the correct bars. **The feet, legs and other large muscles should anticipate the mallet shifts.** This exercise should be performed slowly in all major and minor keys.

$\text{♩} = 45 - 116$

Keyboard



## One-Handed Octaves

This is another difficult exercise! It is meant to be played with four mallets, one-hand-at-a-time, hence the name. Less experienced players tend to use too much arm motion in their octave strokes. This can lead to harsh sounds and wrong notes. To execute this exercise effectively, use a relaxed wrist stroke and keep the stroke heights low. Practice very slowly, using a piston stroke and focus on shifting properly from note to note. Once the technical side is strong, try this exercise in major and minor modes.

$\text{♩} = 90 - 180$

Keyboard



## Two-Handed Scales

## Two-Handed Scales

This exercise was born from the modular four mallet exercises. It is extremely difficult and should be played very slowly. The hand that is playing the scale passage should use a legato stroke and use natural phrasing to shape the line. The “comping” hand uses a piston stroke and must focus on shifting, shaping and balance. There’s a lot to think about! Stick to one key until you get the technical concepts down. Then you can try other major or minor keys (the comping notes stay the same for major and minor).

## Right Handed

**♩ = 65 - 120**

## Keyboard

$\text{♩} = 65 - 120$

3 3 etc ...  
then 4 4 etc ..

The image shows a musical score for a piano piece. It consists of two staves, treble and bass, in 4/4 time. The tempo is marked as quarter note = 65 - 120. The melody in the treble staff is a simple, ascending line of eighth notes. The bass staff provides a harmonic accompaniment with chords and single notes. The score is divided into two measures by a bar line. The first measure contains the tempo marking and the instruction '3 3 etc ... then 4 4 etc ..'.

A musical score for a piano piece. The score is written on two staves, a treble staff and a bass staff, joined by a brace on the left. The treble staff begins with a treble clef and a key signature of one sharp (F#). The bass staff begins with a bass clef and a key signature of one sharp (F#). The music is in 3/4 time. The treble staff contains a melody of eighth and sixteenth notes, with some beamed sixteenth notes. The bass staff contains a simple harmonic accompaniment of quarter and eighth notes. The piece concludes with a final chord in the bass staff.

## Left Handed

**Left Handed**

A musical score for a left-handed piano exercise. It features a grand staff with a treble clef on the left and a bass clef on the right. The right hand (treble clef) plays a melody of eighth notes, while the left hand (bass clef) plays a bass line of eighth notes. The music is in 4/4 time and consists of two measures. The first measure has a key signature of one sharp (F#). The second measure has a key signature of two sharps (F# and C#). The notes in the first measure are: Right hand (F#, G, A, B, C, D, E, F#), Left hand (F#, G, A, B, C, D, E, F#). The notes in the second measure are: Right hand (F#, G, A, B, C, D, E, F#), Left hand (F#, G, A, B, C, D, E, F#).

then  $\begin{matrix} 2 & 2 & \text{etc} \dots \\ 1 & 1 & \text{etc} \dots \end{matrix}$

A musical score for the song 'The Rose Tree'. It features a treble and bass staff. The treble staff has a key signature of one sharp (F#) and a common time signature (C). The melody consists of quarter and eighth notes. The bass staff provides a harmonic accompaniment with a series of eighth-note chords. The score is presented on a single page with a decorative border.



## Four Mallet Roll Concepts and Exercises

There is quite a variety of rolling styles for the keyboard performer to choose from; below are a few of the most common. Achieving a mature sound with these different roll styles will take years to accomplish. Be patient! The end result will be a wonderful array of textures that can be applied to the music. This kind of variety of texture and attention to detail is what separates the good ensembles from the truly excellent ones.

### Traditional Rolls

This is the most common and perhaps most versatile of all rolls. It can be used in almost every musical situation. It involves vertical strokes, alternated between the hands.

Sounds like:



Written like:



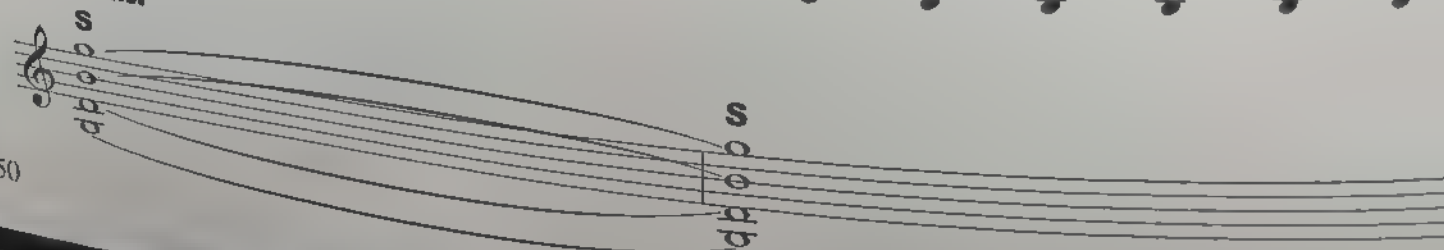
### Lateral Roll (Ripple Rolls)

This roll involves lateral strokes, alternated between the hands. The effect is a fast arpeggiated sound. This is a versatile roll as well, though some chord voicings may make them physically difficult to execute. Many performers prefer to use *outside* lateral strokes in both hands as this emphasizes the soprano and bass voices of the chord.

Sounds like:



Written like:

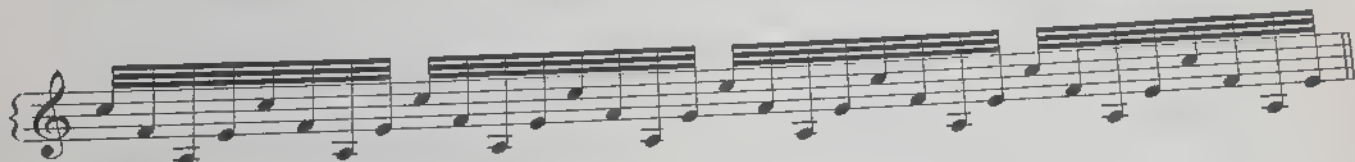
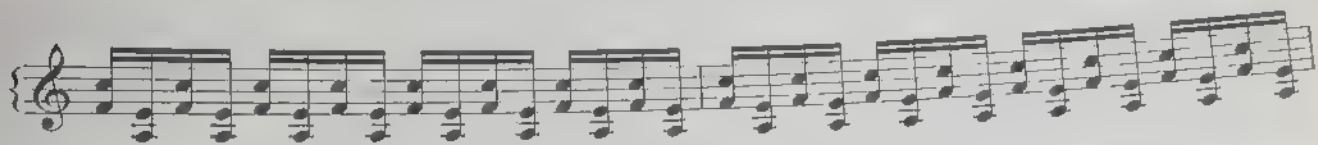


# Lateral Roll Exercise

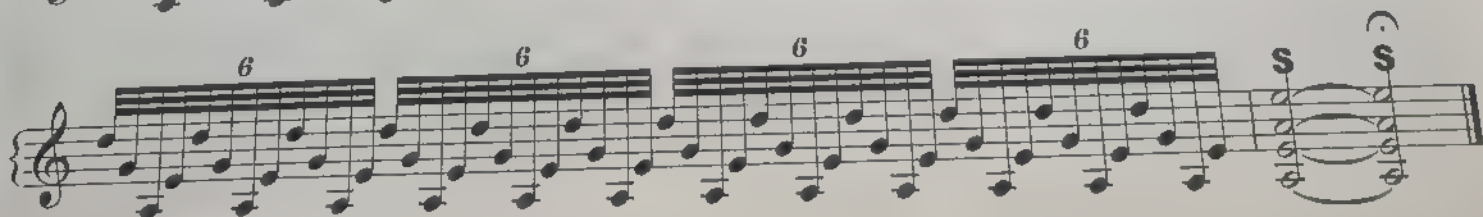
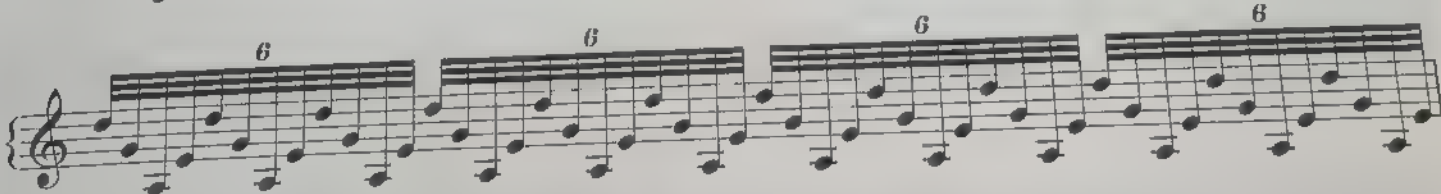
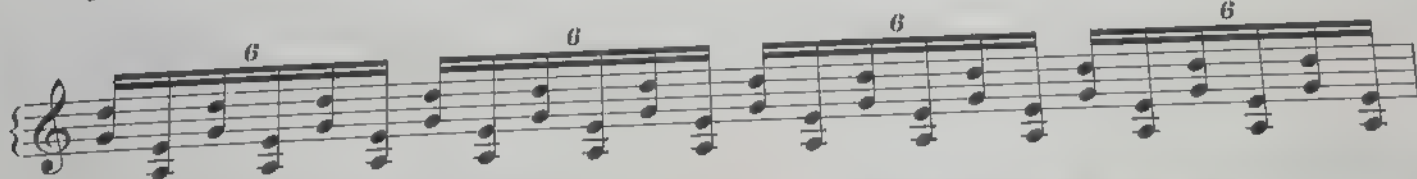
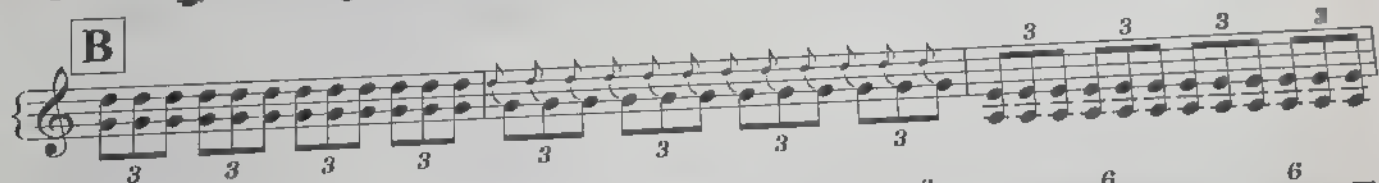
A

$\text{♩} = 68 - 84$

Keyboard



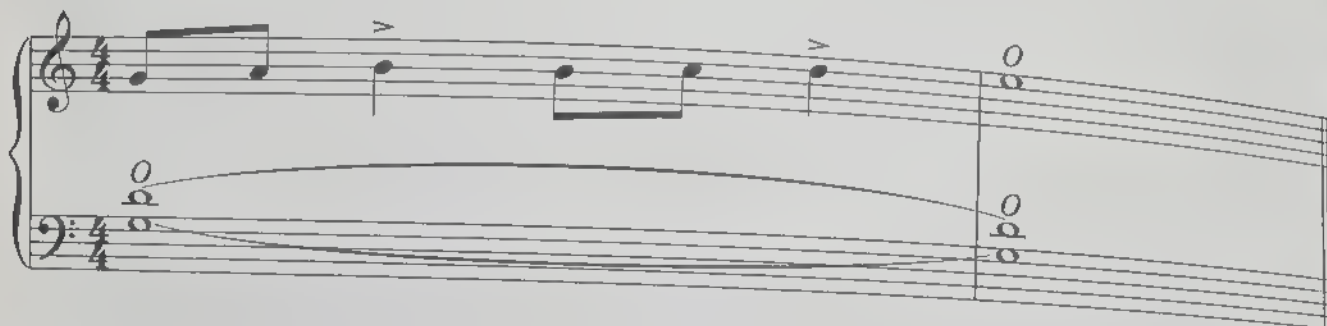
B



## Independent Rolls (One-Handed Rolls)

The independent roll uses a specialized alternating stroke which enables the performer to sustain one or two pitches in one hand. This can be extremely helpful for executing musical passages which involve independent lines (see Examples A) . Independent rolls can also be played in both hands. This will "smooth out" the sound of widely voiced chords (see Example B).

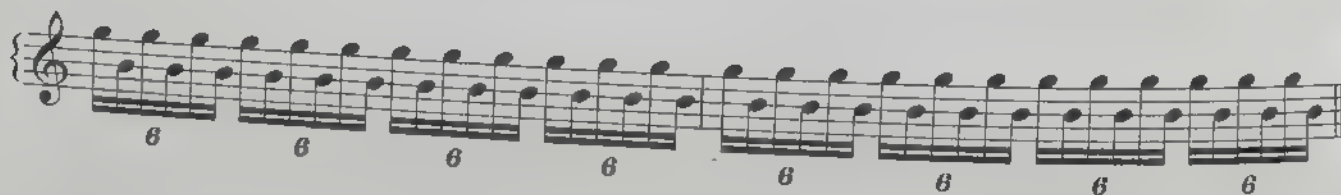
### Example A - Hands are independent



### Example B - Chord with a lot of space



### Sounds like:



### Written like:





# Independent Roll Exercise

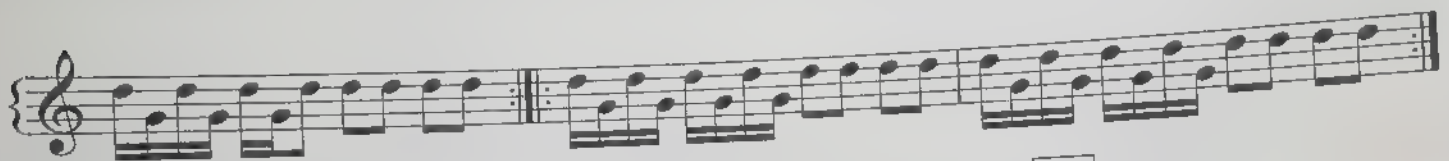
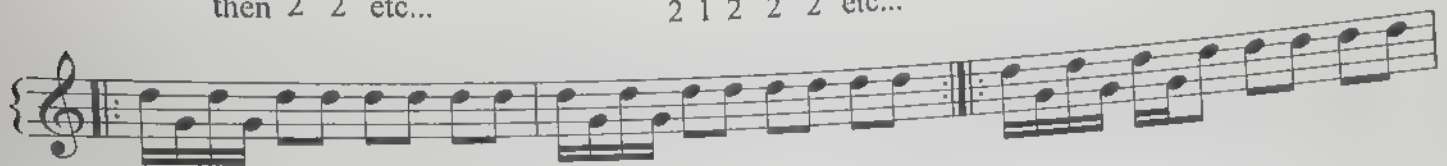
**A**

$\text{♩} = 120 - 136$

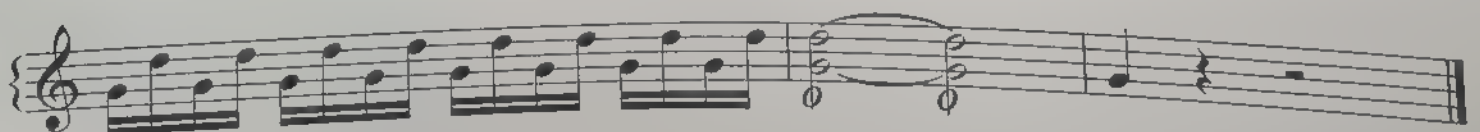
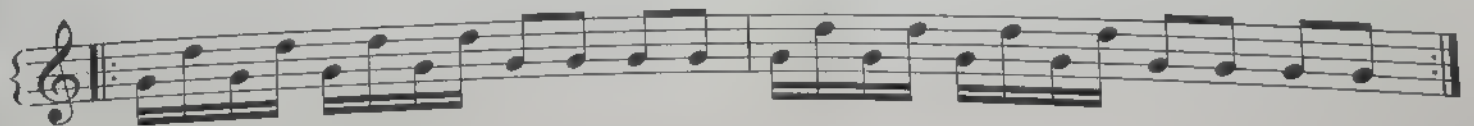
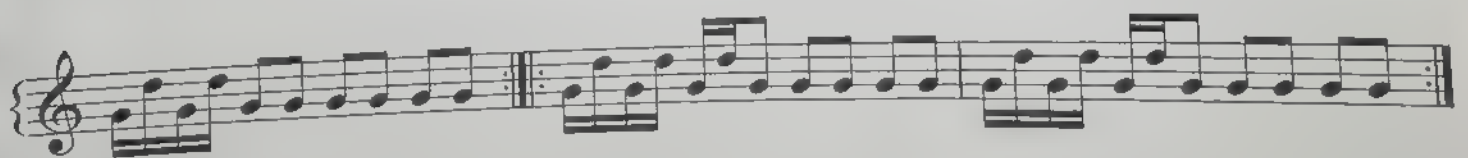
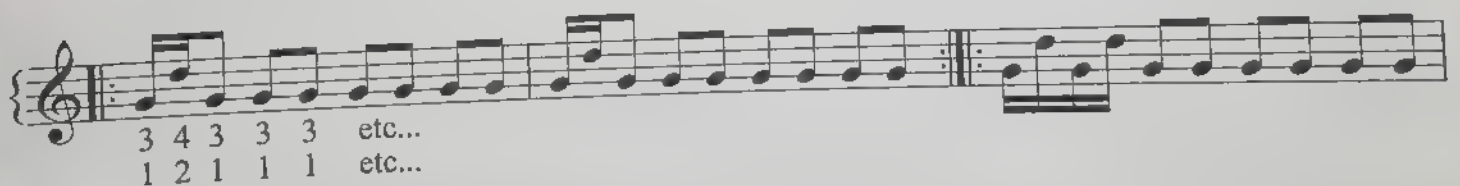
Keyboard

4 4 etc...  
then 2 2 etc...

4 3 4 4 4 etc...  
2 1 2 2 2 etc...



**B**



## Combination Rolls

This roll is achieved by combining a lateral stroke in one hand and a vertical in the other. Combination rolls sound best when one hand is playing a pedal tone (sustaining the same pitch throughout the entire passage). In this situation, play the pedal tone with the lateral stroke and the moving line with the vertical stroke.

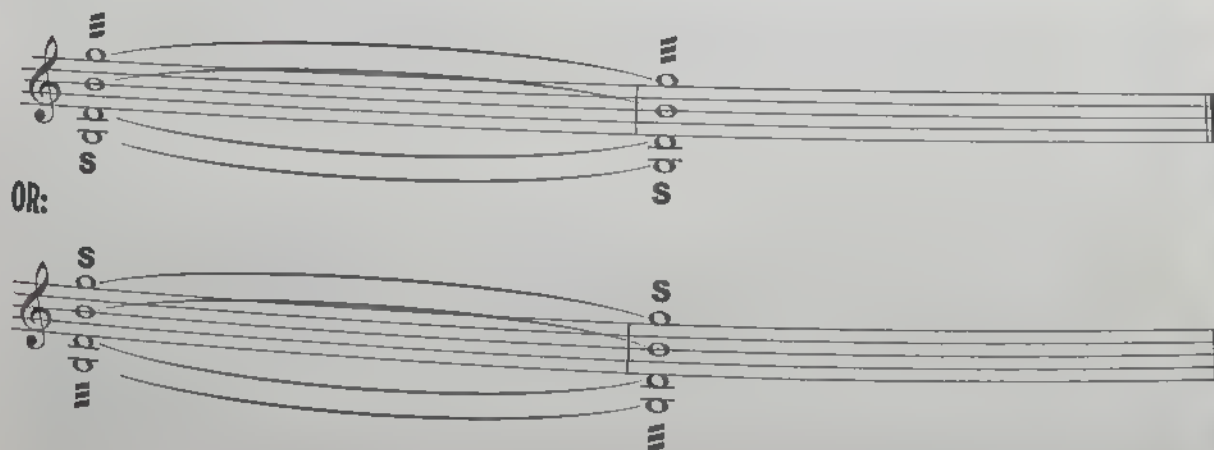
Sounds like:



OR:



Written like:



# Combination Roll Exercise

**A**

♩ = 68 - 84

Keyboard

Musical notation for Section A, Keyboard part. It consists of four staves. The first staff begins with a treble clef and a 4/4 time signature. The notation features a sequence of chords and eighth notes, with some triplets indicated by a '3' below the notes. The second and third staves continue the sequence with similar chordal patterns. The fourth staff concludes the section with a final chord and a double bar line.

**B**

Musical notation for Section B. It consists of four staves. The first staff begins with a treble clef. The notation features a sequence of chords and eighth notes, with some triplets indicated by a '3' below the notes. The second and third staves continue the sequence with similar chordal patterns. The fourth staff concludes the section with a final chord and a double bar line.



## Guatemalan Rolls

This is the traditional roll style of Guatemala, a country with a very proud marimba tradition. Rather than alternating the vertical strokes between the hands, the vertical strokes are played simultaneously. The result is a "full," block-chord sound. This roll also has the most "articulate" sound. For this reason, it is not the most versatile of the roll styles, but it can be a great textural effect.

Sounds like:



Written like:



Roll Speed Rules	
<b>Rule #1:</b>	The <b>louder</b> the dynamic, the <b>faster</b> the roll speed. The <b>softer</b> the dynamic, the <b>slower</b> the roll speed.
<b>Rule #2:</b>	The <b>higher</b> the register on the instrument, the <b>faster</b> the roll speed. The <b>lower</b> the register on the instrument, the <b>slower</b> the roll speed.

## Roll Speed Exercises

These exercises are based on another common chord progression, I – IV – ii7 – V7 – I. Perform these exercises in different registers of the keyboard and with different dynamic shapes (remembering the two roll speed rules). The performer is encouraged to create his or her own chord progressions.

Here are a few to get you started: I – vi – IV – V7 – I or I – vi – ii7 – V7 – I.

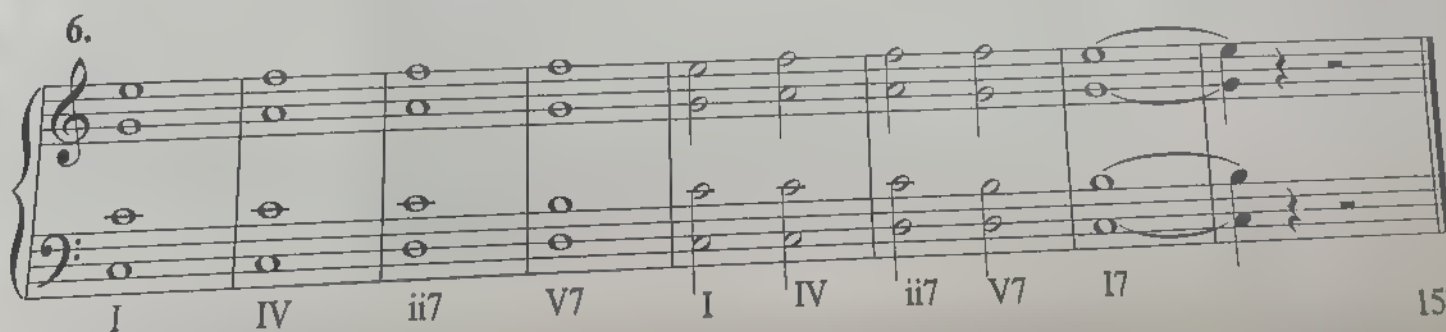
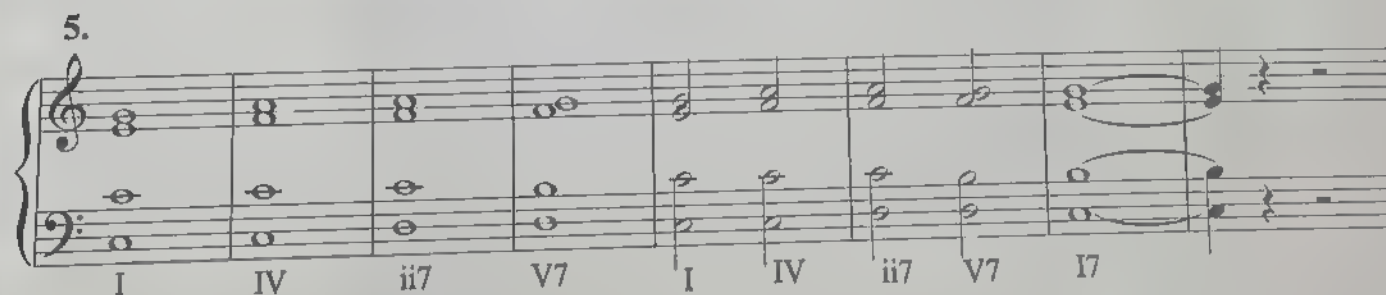
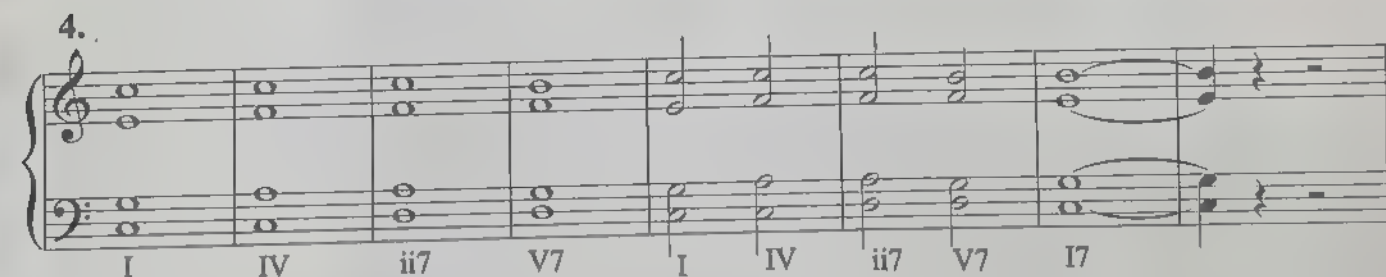
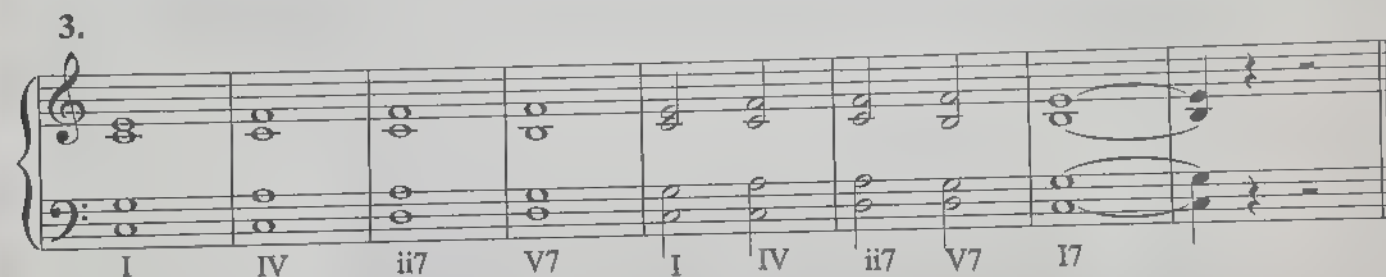
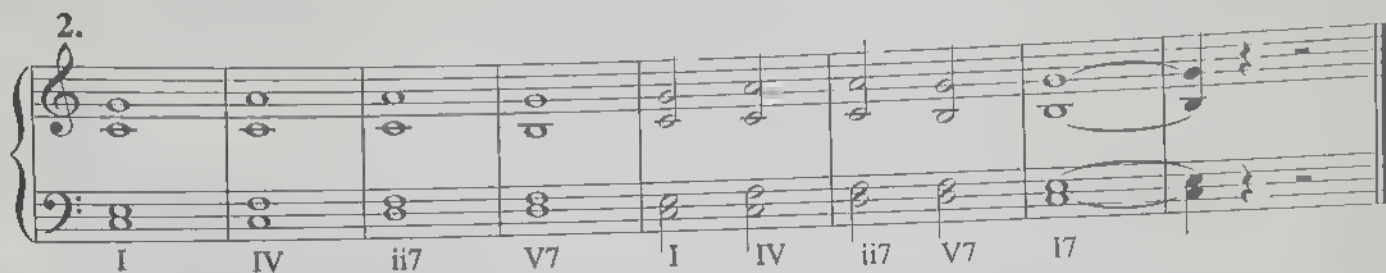
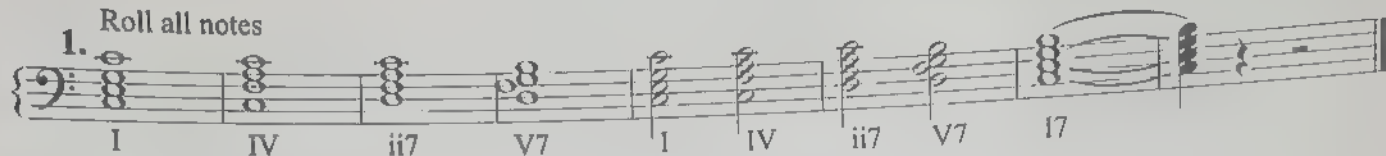
Remember to practice with a metronome. Maintaining tempo during rolled passages can be very difficult.

For the best results with the following exercises, work on the Modular Concepts first. You must perfect each stroke before you can speed it up and apply it to a roll. Also, stick to the recommended tempos; rolls don't have to be fast. You don't want to overlap the bar!

## Roll Speed Chorales

 $\text{♩} = 60 - 120$ 

1. Roll all notes



## BUILDING CHOPS AWAY FROM THE KEYBOARD

Developing hand strength and fluidity, "chops," has been a goal for practically everyone who has ever picked up a pair of sticks. Keyboard players are no exception, though they may run into some unique obstacles. The main obstacle is that students may not always have access to instruments. Students in this situation need to learn how to maximize their time with and without the instrument. Next, working on technical issues, for example four-mallet stroke types, away from the keyboards allows you to focus on *technique* without worrying about pitch accuracy or tone quality. Let's face it, none of us want to hear wrong notes, and because of this we sometimes focus more on hitting the right bar, not on *how* we're hitting it. Also, some keyboard players, particularly those that started on keyboard, may lack some basic "drumming" skills that will take them to the next level. Some of those skills would include: alternating singles (for rolls and fast linear passages), flams and roughs (for grace note passages), and doubles and paradiddles which are often used to make stickings for some passages smoother. Here are a few ideas for effective practice and "chop building" away from the keyboard.

**Get out the drum pad and snare sticks!** Make sure the sticks have some weight to them (2B's are a nice starting point). Start by working on simple rebound exercises (eight on a hand for example) Mallets on keyboards simply don't rebound, but if you can feel rebound on a pad or drum, you can imitate it on a keyboard. Next try playing some of the exercises in chapter 3 on the pad: *Singles, Stick Control, Accent to Tap, Accents*, even the Scale Exercises. Practice with a metronome and concentrate on rhythmic accuracy and getting a consistent sound between your hands. Next you can try some more rudimental music. Maybe the battery section of your band or drum corps has a book of exercises you can play or you can get the Percussive Arts Society list of rudiments. There is an unlimited supply of great snare drum music out there, all you need to do is ask!

Now that you have a feel for rebound and your hands are moving fluidly, it's time to get out **the pillow**. This idea has been around for years and it works like a charm. Because your pillow has no rebound, much like your marimba, you need to *stroke* each note. This takes a bit more effort from your wrist and fingers, which will help to build strength. Again, you can start by working on singles, doubles, paradiddles and rolls with a metronome. **Make sure not to overdo it.** Your wrists may not be used to this kind of work. Keep your "pillow" sessions short at first and lengthen them over time.



Next you can work on four mallet stroke types. The stroke types are explained on pages 133-138. This is the time to work on these strokes without the fear of hitting wrong notes. This is also a good time to slow the strokes down and analyze what your wrist is doing. Remember, you're trying to train your muscles to perform specific actions. The more you perform these actions (strokes) correctly, even slowly, the quicker your muscles will learn.

Finally, it's time to work on four mallet interval changes (explained on pages 105-107). Although you don't have specific notes to aim for you can still work on getting the *mechanism* to work correctly. For example, Burton Grip players can work on getting a smooth motion from their index finger going to small intervals. Stevens players can work on getting into the large interval position and getting the inside mallet to balance properly on the middle finger. These are all coordination issues and are best fixed and fine-tuned when you don't have to worry about playing an E major scale at the same time.



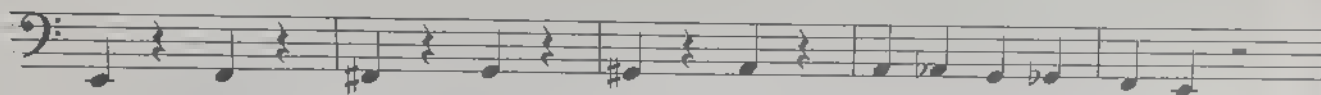
## TIMPANI EXERCISES

### Chromatic Pedaling

This exercise is meant to familiarize the timpanist with each of the drums. First, make sure you can sing each of the exercises in your own voice range. Play each exercise very slowly, in a legato style (dampening only during rests). For some thoughts on pedaling technique, refer to page 115. Next, experiment with different dynamic shapes and accent patterns.

♩ = 55 - 100

32" drum



## 5-Note

This is just one example of a five-note pattern. You can also try minor patterns (G, A, B $\flat$ , C, D), Lydian patterns (G, A, B, C $\sharp$ , D), or any others you can think of. Next, try moving through all twelve keys. As always, **make sure you can sing the exercise first, then play it slowly.** These patterns are usually done on two drums. Make sure to dampen the sustain during rests and when moving from one drum to another. Depending on the key, the top or bottom pitch will be on one drum and all the others will be pedaled on another (as illustrated). Experiment with different dynamic shapes and accent patterns. See page 115 for pedaling technique advice.

$\text{♩} = 55 - 100$

The notation consists of two staves in bass clef. The first staff shows a sequence of notes with rests, with bracketed durations of 29", 26", and 29" above it. The second staff continues the sequence, with bracketed durations of 26" and 29" above it. Two 'x' marks are placed on the notes in the second staff, with arrows pointing to them and the text "dampen C with LH" and "dampen D with RH" respectively.

## Timpani Scales

This exercise is designed for timpanists who have access to 4 or 5 drums. Which scales you can play will depend on how many drum you have. F major (or any other mode) is a good place to start. Try to set the pitches so that you only have to pedal on two drums. For example: with F major, set the low F on the 32", pedal G-C on the 29" and D-F on the 26". For F $\sharp$ , set the low F $\sharp$  on the 32" and the high F $\sharp$  on the 23"; all the other notes can be pedaled on the two middle drums. Again, make sure you can sing the exercise first, then play it slowly. Use the same method as above for dampening. Experiment with different dynamic shapes and accents.

$\text{♩} = 55 - 100$

The notation consists of three staves in bass clef, each showing a scale of notes with rests. The first staff has a key signature of one flat (Bb). The second and third staves continue the scale, with the third staff ending with a double bar line.



## Other Exercises and Methods for Timpani

Below are a few exercises to help develop rolls and rhythmic articulation. Combined with the tuning exercises above, these exercises will provide a solid foundation for the timpanist. In addition, try composing exercises that will suit your timpanist's needs, coordinate with your keyboard exercises, and work with the equipment that you own.

### Timpani Roll Variations (play with keyboard "Singles")

Here are four exercises for developing rolls that will allow the timpanist to play with the keyboard ensemble (playing the exercise "Singles"). Remember, the roll speed rules will be similar, though less exaggerated, to those of the keyboard players. Here's a reminder:

Roll Speed Rules	
<b>Rule #1:</b>	The <b>louder</b> the dynamic, the <b>faster</b> the roll speed. The <b>softer</b> the dynamic, the <b>slower</b> the roll speed.
<b>Rule #2:</b>	The <b>higher</b> the register on the instrument, the <b>faster</b> the roll speed. The <b>lower</b> the register on the instrument, the <b>slower</b> the roll speed.

Here are a few other ideas to apply. If the rolls are not tied, leave a slight breath in between each roll. For forte-piano rolls, strike the drum at forte, pause very briefly, then start to roll at piano. Most importantly, timpani rolls should be **rebounded**, **single-stroke rolls**, not double-stroke rolls or buzz rolls.

Again, experiment with shaping ideas and accents. Feel free to create your own roll exercises to go along with other keyboard exercises.

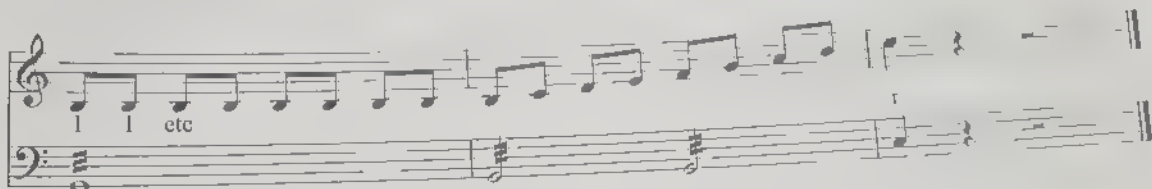
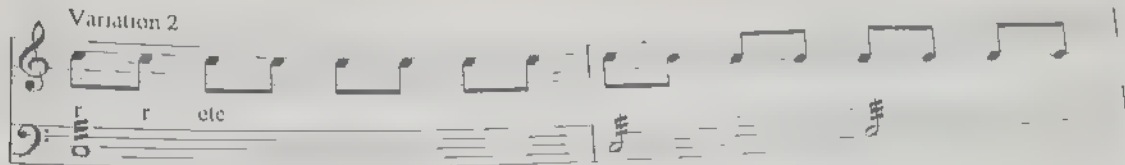
$\text{♩} = 70 - 200$

Variation 1

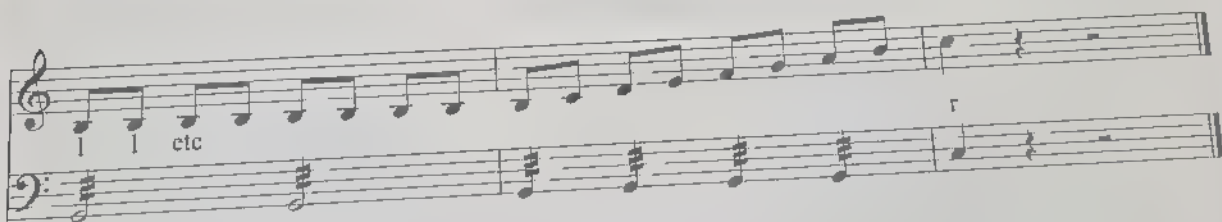
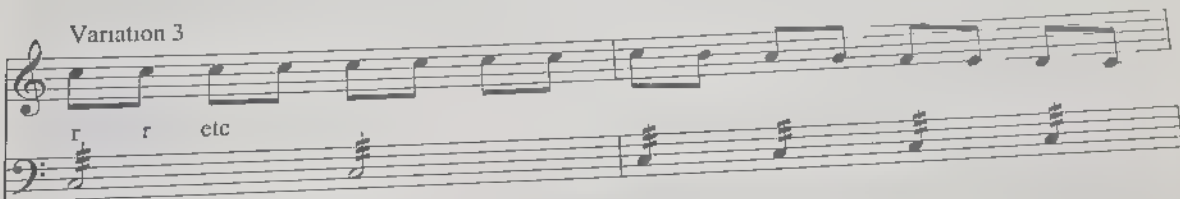
Keyboards

Timpani

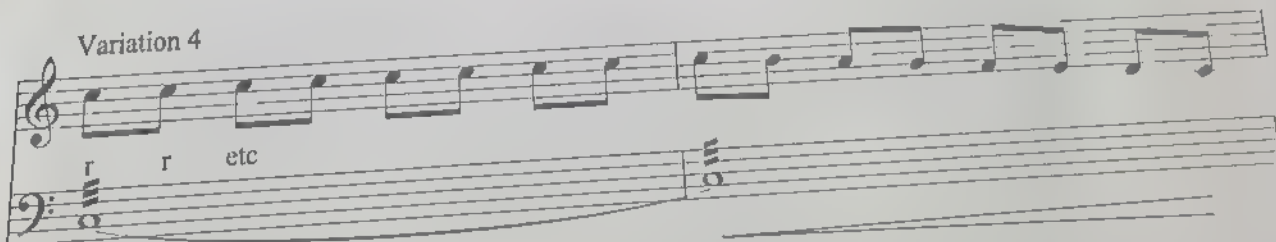
Variation 2



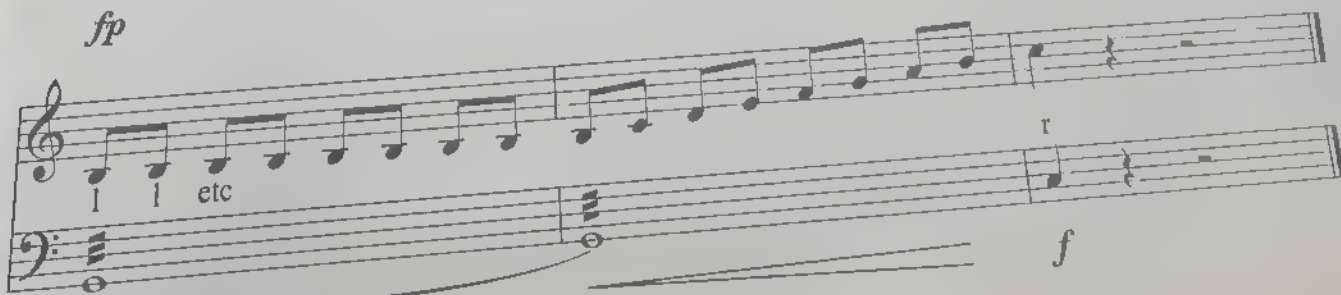
Variation 3



Variation 4



*fp*



*fp*

# **Articulate Variations (with keyboard "16<sup>th</sup> Note Scales No.1")**

Here are two exercises that work on articulating rhythms. Again, these can be played with the keyboard ensemble (playing "16<sup>th</sup> Note Scales No. 1").

The goal is to develop rhythmic accuracy and "touch." Instead of immediately going to a harder mallet, try playing the exercises with a medium mallet and a firmer fulcrum. You may also want to experiment with turning your hand over slightly so the palms are flat to the timpani head. Some timpanists feel more secure articulating rhythms with their hands "flat." Experiment with different accent patterns and dynamic shapes.

$\text{♩} = 60 - 190$

## **Variation 1**

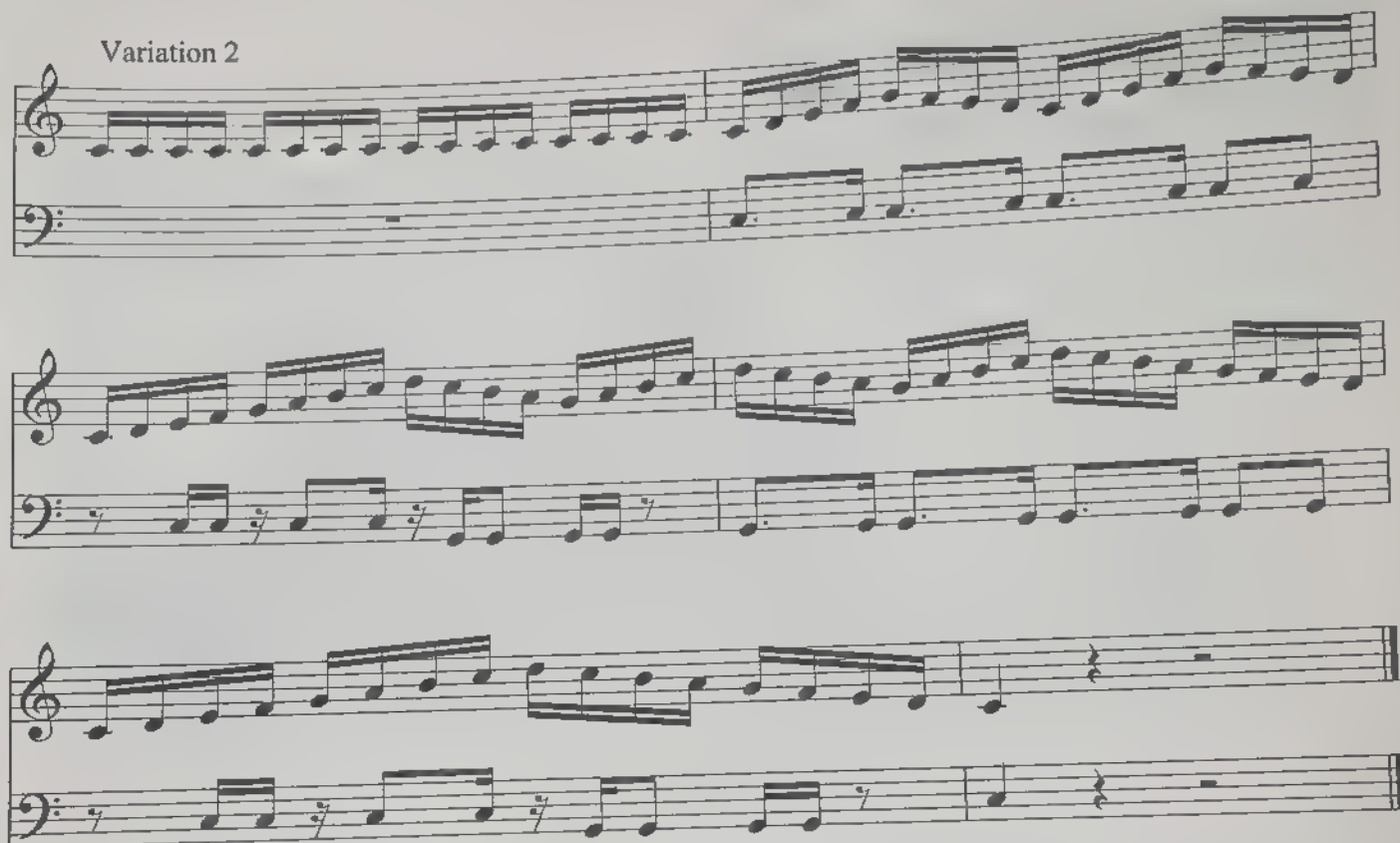
Keybds.

Timp.





Variation 2



### Further reading for timpani...

Here are a few additional resources that will provide years of challenge:

Vic Firth, *Solo Timpanist*  
Mitchell Peters, *Fundamental Method for Timpani*  
Jacques Delecluse, *Vingt Etudes pour Timbales*  
Raynor Carroll, *Excercises, Etudes, and Solos for the Timpani*  
John Beck, *Concepts for Timpani*  
Saul Goodman, *Modern Method for Timpani*

Also, there are dozens of orchestral excerpt books which will provide challenge and open the door to hundreds of years of the finest music. Any of these books can be ordered from Steve Weiss Music in Pennsylvania.

## REHEARSING THE PIT

This chapter was written for the instructor and contains advice for running effective rehearsals and performing consistent shows.

### Warm-up Concepts

The technical warm-up is a crucial part of your pit program. Here you can take the time to develop all aspects of technique and musicianship. The following are some ideas used by the Santa Clara Vanguard to produce effective warm-up sessions.

#### The Setup

Start by looking at the setup of the instruments. Some pits warm-up in circles or place their keyboards in a tight box shape. This can be effective in certain situations. For example, try having keyboard players pair up, facing each other, to work on interpretation and dynamics. This setup is also good when space is limited. However, it is very important to **duplicate your “show” setup in the warm-up**. Vanguard warm-ups typically include all keyboards and timpani in their normal show setup.

#### Proper Mallets for Warm-up

The next issue to deal with is getting the proper mallets in the hands of the players. After reading the section on “touch” (page 109) you know that the hardness of a mallet has a big impact on the firmness of the fulcrum. A softer mallet will make you work harder to articulate the notes than a hard mallet. For this reason, many players prefer mallets that are not too hard. On the other hand, you don’t want a mallet that is so soft that all you hear is a “wash” of sound. Here are the mallets (by Innovative Percussion) that the Vanguard pit often uses for workouts: marimba (top) Casella 1003, marimba (bottom) Casella 1002, vibes Casella 1006, xylophone Casella 1007, Ross IP 901, or Ross IP 903, timpani Vic Firth General. Though all of these mallets have medium-hard to hard cores, they all have a soft yarn, cord, or felt covering. This takes away is due to the fact that they all have a soft contact sound on the bar. This much of the harshness and gives them a dark, round sound. Also, notice that all of the xylophone mallets are medium-soft to medium; this prevents the xylophone sound from dominating the ensemble.

## The Warm-up Repertoire

Now the big question: what exercises should you play? The time of the season may help you answer that. **During the competitive season**, it is best to dedicate a good chunk of rehearsal time to addressing very specific concepts (working on a specific roll style, or working on accents). Find exercises that will **relate directly to the music** you are playing. Many groups waste rehearsal time working on exercises that will not immediately benefit the musical ensemble. You should also spend time working on building hand strength and stamina (chops). Also, realize that this is the time to make mistakes and learn. Try to avoid a "pressure" or "no-mistakes" atmosphere. Make sure the students are mastering the concepts first; the notes will follow.

**During the off-season**, spend time touching on *all* aspects of technique and musicianship. This is the time of the season to learn and grow. This is also a great time to learn and perform a variety of percussion ensemble pieces. Also, try to expose your students to different method books, solos, duets, videos of great performances, and cd's of all types of music (it doesn't have to just be percussion).

At the Vanguard we have two warm-up scenarios: show and rehearsal. For the **show warm-up**, which is usually about 35-45 minutes, they play 2 or 3 exercises that the group feels very comfortable with. Then they will review show excerpts and music changes. This will build their confidence going into the show and get their "brains engaged." A typical **rehearsal warm-up** usually lasts for 1-3 hours, time permitting. First, they start with a **simple exercise to get the hands moving**. The following exercises should focus on achieving a full stroke and working on basic musical shaping. They will usually repeat these exercises through all 12 major or minor keys, then move on to a faster tempo.

**Singles (page 121)**

**16<sup>th</sup> note accent to tap (page 124)**

**Four mallet arpeggios (page 146)**

Once the hands and brains are ready they will move onto some **speed and fluidity exercises**. At this point they're focusing on relaxation, consistency of sound, playing zones, and subtle shaping. They will usually go through 6 keys (for the exercises that change keys), change tempos, then go through the other 6 keys. This allows them to get to the faster tempos more quickly. They will usually go through 6-7 tempos, getting about 5-10 beats per minute faster each time. Here are some suggested exercises from section 3:

**16<sup>th</sup> Note Scales 1 and 2 (page 122-123)**

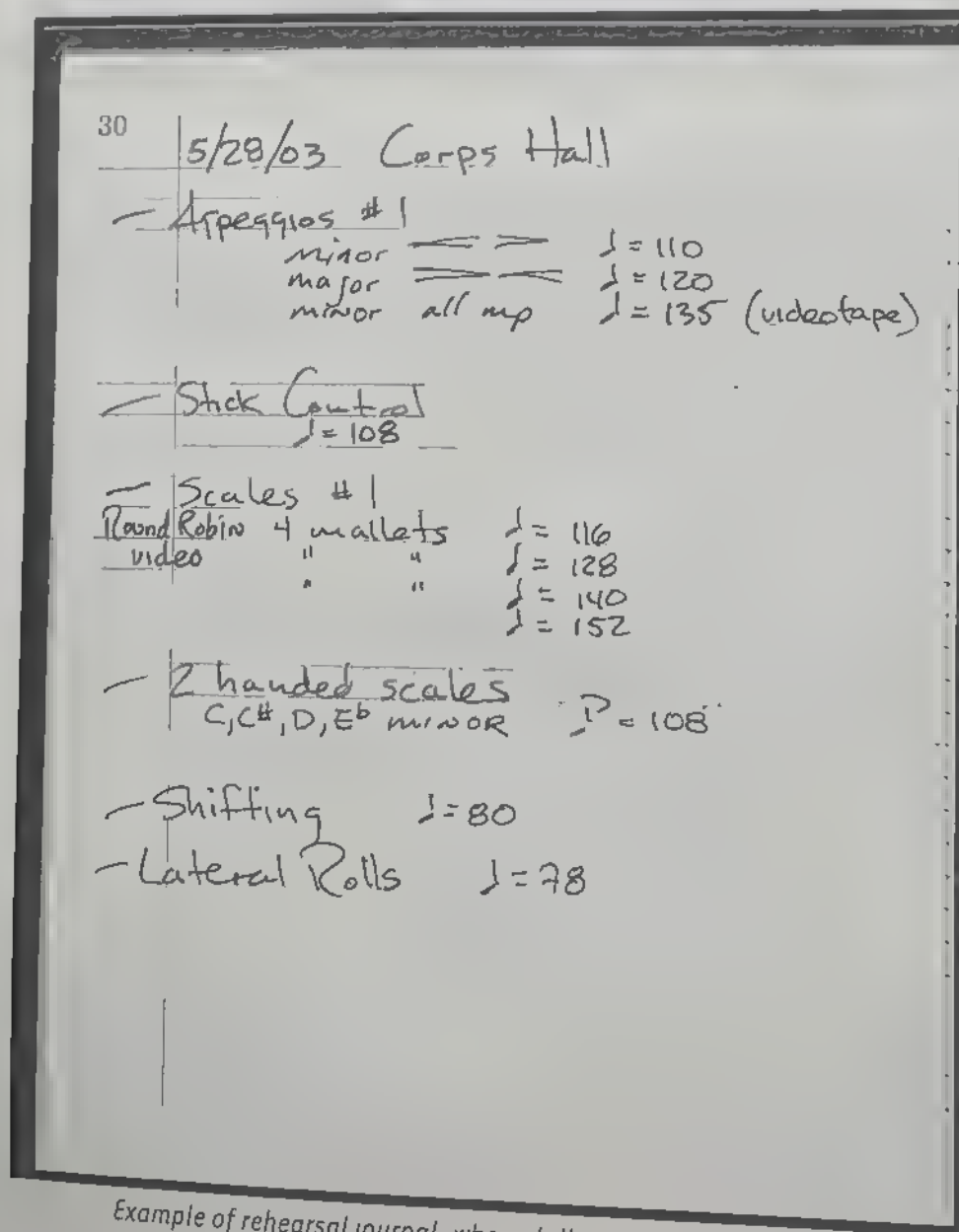
**Yak-scents (page 126)**

**Stick Control (page 125)**



If time permits, we move on to **roll exercises** (lateral rolls, independent rolls) or play through some of our **percussion ensemble literature**. Throughout this whole process, we like to make a few subtle changes to the exercises (new accents, or different shaping) and we'll also make changes to the exercise repertoire every few weeks. This variety keeps the students thinking and it keeps the routine fresh.

It's also a good idea to keep a **journal** in order to track the progress of the ensemble and to see what exercises they've done from day to day.



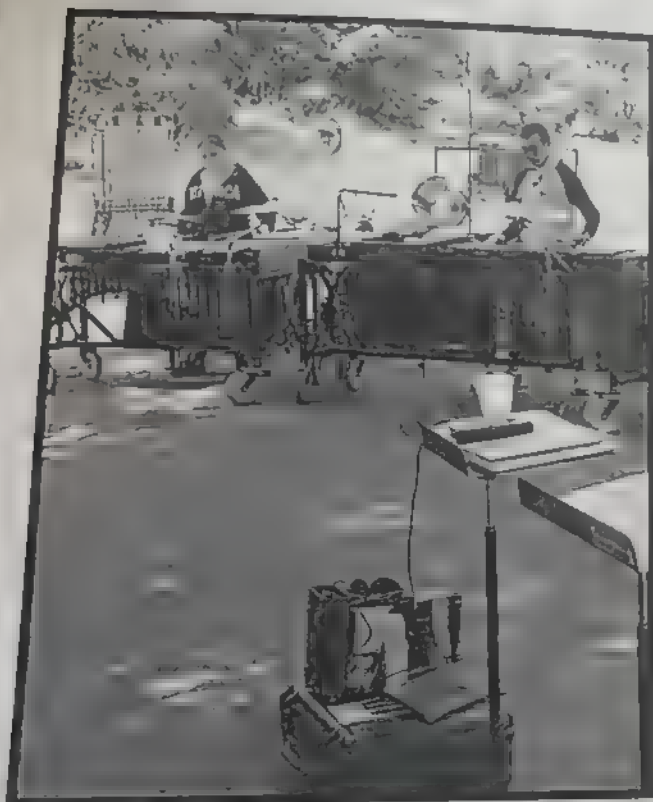
Example of rehearsal journal, where daily notes can be taken.

Another important idea is to **create new exercises** based on problem spots of the show music. These problems may be related to specific stroke types, note accuracy, rhythm, tempo maintenance, listening, or balance, just to give a few examples. Whatever the issue is, create an exercise that will target that specific spot in its *simplest* form. This strategy is far more effective than repeating the show excerpt over and over again and hoping they get it right!

## Using the Metronome

One important tool for the instructor during the rehearsal is the metronome. **Amplifying a metronome** through a portable speaker system has become a common practice with many bands and drum corps. Most groups don't have the funds to have a speaker and metronome for every section, so try to schedule your warm-up at a time when the equipment is free. What you'll like about using the metronome and speaker is that it frees you up to teach! Rather than having to focus on keeping time with a woodblock, you can move around, work with students, and have your hands free to demonstrate.

Another advantage to using the metronome is that it allows you to remove the "tap off." Though many groups like to "tap off" exercises, like a battery section would, you'll find that you can move faster and achieve more in the rehearsal if *you* (the instructor) count off the exercises with the metronome. Some groups will even have the section leader "cue" the start like a chamber ensemble.



*Here is an example of using an amplified metronome. Notice the speaker is facing the ground so its sound isn't so dominating.*

Start with the metronome on a **quarter note or eighth note pulse**. This will give the students plenty of information to help their rhythmic accuracy and tempo control. Experiment with having the **speaker facing the ground** with the volume relatively low. Realize that most of these speakers are very "directional." This can cause hearing damage, especially with the high-pitched metallic "click" of most metronomes. This will also **force the players to listen**, a very important skill to develop.

Eventually you should start to "wean" the players off of the metronome. They have to develop their own sense of tempo and this won't happen if they never get a chance to play without metronome assistance. A few ideas to aid the weaning process include: changing the quarter note pulse to a **half note or whole note pulse** (giving them less information) and turning the **metronome off and on** during the course of the exercise. Eventually work towards starting the exercise with the metronome, turning it off during the exercise, then checking the tempo at the end.

## Evaluating the Exercises

Every instructor has their own set of criteria and methods of evaluation for the warm-up session. Here are a few tips to make the most of your rehearsal time.

It's important to **hear the individual** during the group session. To achieve this try the "Round Robin" approach. This can be done with any exercise. First, have the entire group play the exercise. On the next repetition, have a student play by themselves. Repeat this process until you've heard every student play. Not only does this allow the instructor to hear and evaluate each student, it allows the *students* to do the same. This process can be very revealing for exercises and show music! Most instructors agree that a mature sounding ensemble is made up of mature sounding individuals.

Another bit of advice is to **leave enough space** between repetitions for "thinking" time. Sometimes you'll hear groups play through an exercise with only two counts of space between each rep. This doesn't give the player, or instructor, enough time to evaluate pitch accuracy, technique, attacks, or releases.

One final bit of advice is to have the players *memorize the technique, posture, and stance guidelines* on pages 98-109. Not only is this important for their technical advancement, but it will also create a **working vocabulary** for the rehearsals.

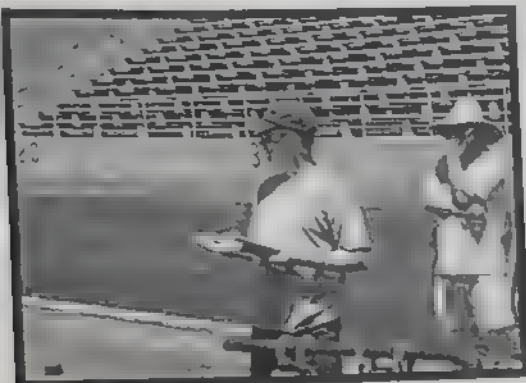
In short, during a warm-up session focus on the technique, posture, and stance guidelines, playing zone accuracy, consistency of sound, balance of the ensemble, musicianship, *then* pitch accuracy. For each warm-up set technical and musical goals; don't just aim for correct pitches. If you master the technique first, *then* you will hit the correct notes!

## Rehearsing the Show

The warm-up is over and the ceremonial moving of pit equipment has been completed. It's time to rehearse with the entire ensemble. You, the instructor, must take advantage of your space! There are a few vantage points that will allow you to evaluate the music very effectively: in front of the pit, directly behind the pit, and from the press box. In an ideal world, you would have enough staff members to place one person at each of these positions. If not, try to divide your time accordingly.



## Standing in front of the pit



Jim checks notes and Glen ponders...

This is where much of your “cleaning” of the pit will happen. This is your chance to listen to the rhythmic clarity and consistency of interpretation from player to player. This is also a good time to check out the balance and blend *within* the pit. Is the xylophone over-balancing the vibe sound? Is the suspended cymbal drowning out that beautiful glockenspiel countermelody? This is the time to fix these issues. Since you’ve already warmed up with the metronome, you know the tendencies of your players. Besides their tendencies with rhythm and tempo, you also know their tendencies with balance, playing zones, consistency of sound, shaping, and articulation. It will all show up here.

This is also a great time to check other important issues like vibe pedaling, dampening of various instruments, accessory technique, and how well they “perform.” Essentially, these are all of things you would be looking and listening to in a sectional rehearsal (pit alone). The only thing you would do differently in a sectional is that you would spend more time listening to individuals play.

## Standing behind the pit



Chris phones in issues to the press box.

If you stand on the front sideline, directly behind the pit, you are in the ultimate “hot spot.” This is a great spot to check timing issues. From this position, you can watch the drum major and check the timing between the field musicians and the pit.

Your first task in this process is to **watch the drum major** and see how well they are holding the tempo. Try to have a metronome to your ear and watch the major’s pattern. Besides checking for tempo maintenance, you can also check for pattern clarity and check to see where the major’s “focus” is. What section are they watching on the field and trying to keep in time? Which section to focus on will change from phrase to phrase. If the major feels like they are being pushed or pulled by the ensemble, have an instructor go to the back of the field with the metronome and speaker. This can be very revealing!

When the drum major is confident with their tasks you can check the **timing of the field percussion and winds**. On the field, there are many situations that can affect their timing. Here are just a few common problems for the field musicians: slowing down during direction changes in the drill, the battery slowing down during rolls or difficult technical passages, slowing down going into halts, they may be inconsistent with tempo changes, ritards, or accelerandos, or their distance to the front sideline may affect their timing (if they are too close or too far). During this process it is very important to make the pit aware of these tendencies. During a performance they will have to **listen back and adjust** to all of these “issues” coming from the field.

## Standing in the Press Box

Standing in the press box or up in the bleachers will provide you with the best opportunity to address overall ensemble issues such as balance, blend, timing, and general effect. Before you head “up top,” spend some time directly behind the pit, as mentioned previously. This will help you to know the timing and tempo tendencies of the entire ensemble. From the press box, you will have a better view to see exactly what is causing these problems; particularly if they are drill related. Experiment with having the pit tacet during some reps. This will highlight the backfield problems and allow you to address them.

More importantly, as a pit instructor, this is your time to balance the front ensemble with the *entire* musical ensemble. You’ll find that there are certain **instruments that often overbalance**. Some of these include: suspended cymbals, tam tams, concert bass drums, xylophones, high metal sounds like crotales, glockenspiels, and bell plates. These problems are usually easily fixed. Simply bring the performer’s dynamic level down or experiment with a softer mallet to see if that takes off some of the “edge.” If this doesn’t do it, perhaps that part is simply too overbearing for the full ensemble score. If this is the case, you may have to “thin-out” or remove the part.

If **parts are under-balanced** and not cutting through, the solution may not be so simple. Again, you may try to bring the dynamic level up or experiment with different mallets. More often, under-balanced parts are a **scoring problem**. Perhaps the part is too fast. This means the part will have to be played low to the keyboard resulting in a low dynamic level. Perhaps the part is scored too thinly. Can it be played in octaves, or voiced with four-mallets, or played in a *different* octave? Sometimes the part may be “uncomfortable” to play. For example, a B major chord (B, D#, F#, B) sounds harmless enough, but simply doesn’t lie well under the hands. Uncomfortable parts can usually be fixed with very simple score edits or new stickings. Another very common problem is **getting vibraphones and chimes to cut through**. The solution to this may be easy: be very *generous* with the pedal. Though leaving the pedal down for an entire phrase may sound awful to the performer, it will sound very full and lush to the audience. Even staccato chords can use a quick pedal to “open” up the sound. There are very few times when you don’t use the pedal.

One other important issue to be addressed from the press box is "**length of sound**" and "**tapering of sound.**" There are several instruments in the pit that sustain long enough to cover up or "mask" the sound of other instruments (in the pit or on the field). Not only will this cause musical balance problems, but it may also prevent pit members from hearing what's happening on the field. This can cause serious ensemble timing problems. For example, if you strike a tam tam at *forte*, its sustain will last for several measures. To prevent the tam tam's sustain from covering up other sounds, you can taper its sound by running your fingers across the instrument. Essentially, this makes the instrument die out quicker. You may also want to determine exactly when you want to *completely* choke off the sound of the tam tam. This is the kind of detail that will lend clarity to your ensemble. Other instruments that fall into this category are: suspended cymbals, concert bass drums, vibraphones, and crotales.



*We stumbled upon this gem of a rehearsal while on tour somewhere in the U.S. For everyone's benefit, try to avoid the "sitting on a chair, destroying a woodblock technique" employed here. (Faces have been blocked out to protect the innocent...)*



## Getting Clues in the Pit

We've all heard the battle cry of the pit, "**LISTEN BACK**," but sometimes, they need just a bit more information. Yes, the pit needs to listen back to the field musicians and adjust to what they hear. It's simple physics. But sometimes, it can get tough to hear what's going on behind you. If you've played in a pit, you know that sometimes you can only hear "snippets" of the field ensemble. Realize that the instrument you're playing, a vibraphone for example, is throwing all its sound into your face, not to mention the fact that your friend next to you is hitting the concert bass drum so hard you feel the ground shake. Here's the dilemma: the pit needs to play their instruments loud enough to be heard in the stands, but at the same time they still have to listen to what's happening behind them. Here are a few concepts that may help you through this process.

In most situations, it's best to assign a "**lead player**" in the pit. It is the lead player's job to listen back to the field musicians. Then, have as many pit players as possible listen to the lead player, rather than trying to decipher what's happening on the field. You can determine who the lead player is based on these criteria. Who has the most rhythmically active part? Most players find it easier to adjust a simple part to a more active part, rather than the opposite. What voice cuts through the easiest? Oftentimes it's easier to pick out a xylophone part or bell part, rather than a vibraphone part. Is anyone playing a time-keeping part? For example, is anyone laying down a quarter note groove on cowbell or eighth notes on a cabasa? The player with the lead part may change from phrase to phrase. Defining this should be a part of your sectional rehearsal. You may want to keep this method of ensemble playing in mind when you're writing your score!

Another concept to try is the "**chamber music**" approach. If you watch a good chamber group, you will see them cueing each other in a subtle way. For the pit, this may include subtle cues with a mallet or free hand, or breath cues. You'll find that if your pit breathes before an entrance, like a wind player, your attacks will be much more accurate. In performance, the chamber music approach works well when players are transitioning between instruments and they've lost the pulse, or for players who are in bad listening situations and simply can't hear a pulse. A good way to develop this skill is by playing unconducted percussion ensemble literature.

Sometimes (yes you heard it here first), the pit has to **watch the drum major**. This helps in situations such as tempo changes, mixed meters, or difficult listening situations (for example, when the battery percussion is not playing). As you know, if the pit plays directly with the drum major's hands, they will play ahead of the field musicians. The trick is to watch the drum major and *continue* to listen back. This will tell you how far behind the major's hands you have to play. This practice of watching is **very common in ballad-type pieces**. These are the most difficult pieces to play! There is seldom a strong sense of pulse on the field and usually quite a bit of tempo fluctuation. It may also help to **watch the feet of a marching member** for pulse. This isn't practical for all instruments. Keyboard players, for example, are facing forward.

But for accessory players, this can be a great help. Just make sure they are reliable feet!

One final ensemble aid is giving an audible pulse: "**dutting**." Having a *marching member* giving a pulse, using the word "dut," can be a great help for rehearsal and performance situations. Make sure that it is not audible in the stands though (this is very distracting for audience members). As for pit members "dutting," the rules are simple. Don't do it. Again, it can be very distracting.

These concepts will work for about 95% of the show. For the other 5% you may simply have to use "the force." In other words, you may not hear a pulse behind you and looking up may not be an option. At this point, **keep good time and define a point in time when you can check back in with the ensemble**. This can be a bit scary for the performer and instructor, but that's what makes live performance so fun!



## Performing by Jim Ancona

Now we're getting to a very personal topic: how to make the pit "perform." I can simply state some things that I like and some that I don't. The pit instructor and staff will have to make decisions based on their own beliefs and the personality of their pit. Here are four simple rules:



**Rule number 1 for performing in a pit: Look up!** No, I don't mean staring straight ahead like a *robot* while you're playing a blazing fast 16<sup>th</sup> note run. I mean looking up in between phrases and when you're not playing. You would be amazed at the affect this has on an audience. This promotes a tremendous sense of confidence!

**Rule number 2: Communicate!** One of the reasons I love to watch experienced pits perform is because they communicate with each other during the show. This is a very sincere way of performing. Sometimes you'll see them making eye contact with each other, a smile, a "knowing" nod; they are enjoying performing together. This can be contagious and VERY fun to watch!



**Rule number 3: Make performing a part of your rehearsal.** If you don't practice performing during the rehearsal, you won't do it during the show. This is particularly true for musicians who are not used to performing. A seasoned performer can turn it on for the show; they just have to make sure that some of their "un-seasoned" colleagues are ready for it!

**Rule number 4: Everyone has to be on board.** We've all seen shows where one performer is having the time of their life and the rest are standing around like moss-covered statues. Unfortunately, this makes the one person who is performing look out of place. **Video taping rehearsals and performances** can help in this situation. Sure, performing may seem unnatural to some, but if it's done in a subtle way, everyone can be made to feel comfortable.



Director of photography, James Ancona

Sounds easy, but it's not. This is what really separates the good pits from the great pits. As I mentioned before, for my tastes the key is to be subtle. Try to avoid "fake expression" and overt visuals. Keep your pit a *cheddar-free* zone. If your musicians feel good about what they're doing, they will do it every time!



## ARRANGING AND SCORING FOR THE PIT

One thing that makes the drum corps and marching band activities so incredibly unique is the way in which the music is written. The front ensemble has evolved into its own “orchestra” within the overall percussion ensemble. Today, without an effective pit score, your marching ensemble is lacking a very important musical ingredient.

In this chapter, we will discuss various ideas on how to write for the pit. To be successful, you will need a pit score that has been arranged specifically for your ensemble, your student’s abilities, and the equipment you own.

### Notation Concepts

Let’s imagine you are going to submit your pit arrangement to a publisher for consideration. How professional would you want your score to look? You’d want it to be as close to perfect as possible, right? Right! Using correct notational guidelines and engraving techniques is essential. These days, it’s quite common for arrangers to use **notation software**, such as Sibelius or Finale, to create their scores. Not only do these programs make your scores easier to read, they will save hours of time by extracting individual parts and they can be used as an audible playback source on your computer. The playback will let you hear your score before the ensemble even sees it. Another benefit of notation software is the ability to e-mail parts and midi files to the students so they can see and hear the music before the rehearsal.

Beware: owning a notation program isn’t going to make you a better arranger. Notation programs are simply a tool. If you decide to use one of these programs to arrange your pit score (or anything for that matter), be prepared to spend ample time learning the software and understanding how to make it work for *your* needs. If you’re spending more time figuring out how to make your program work than actually arranging, perhaps it might be better to do it the old fashioned way, with a pencil, a big eraser, and a stack of manuscript paper.

## Laying out the score

Let's start with a blank slate. At this point, you need to know what type of equipment you are working with, the setup, how many players are in the ensemble and their ability levels. Now you can lay out the score page. While there are several ways to lay out the score, it will help you keep track of your players if you create **one staff line per player**. If you have 8 players in the pit, create 8 separate staves to accommodate them. Here are the two most obvious ways to do this:

### Creating a personalized staff for each player

This method is most appropriate if you rotate your players to different instruments throughout the show. It also works well if you have a strong knowledge of your player's capabilities. By creating a personalized staff for each player, you are creating a **"custom made"** part for them. This will help you to write for the strengths and weaknesses of the ensemble. Also, anytime you want to address a certain player during rehearsal, you'll know exactly where to locate their staff line on the score.

Check out figure 5-A, and you'll see the staves named after each player in the pit. In order to keep track of who is playing on what instrument, it's important that you create labels in the music to indicate what instrument is being used.

Figure 5-A shows a pit score sample from SCV's opener in the year 2000. The score is written for 10 players, each with a personalized staff. The players and their instruments are: Kim (Vibe 1), Tim (Vibe 2, Crotales, Xylo), Aimee (Vibe 3, Sus Cym), Kare (Marimba 1), Nate (Marimba 2), Kristen (Marimba 3), Steve (Timpani), Mike (Snare Drum, Muted BD). The score includes dynamic markings (mf, f, p, mp) and a tempo marking of 184 bpm. The music is in 2/4 time and features various percussion patterns and melodic lines.

Figure 5-A: Pit score sample from SCV's opener in the year 2000

### Having each staff line represent main instruments

In any front ensemble score, you'll find there are primary instruments which are used for the majority of the show. In arranging scores for the Vanguard, our main voices are: 3 vibraphones, 3 low-A marimbas, 5 timpani, glockenspiel, xylophone, and percussion. These nine staves comprise the front ensemble score. Of course, we'll use other instruments throughout the show; these are simply our main voices.

When setting up your score in this manner, it's customary to list the high pitched instruments on top and the low pitched instruments on the bottom. This is fairly common in percussion ensemble literature and makes it easier to quickly locate a certain instrument in the score. Figure 5-B is an example of this page setup. Notice you still need to label any instrument changes that may occur along the way.

The image shows a musical score for a percussion ensemble. It consists of nine staves, each labeled with an instrument on the left: Xylo Glock, Vibe 1, Vibe 2, Vibe 3, Mar 1, Mar 2, Mar 3, Perc, and T.m.p. The score is for measures 172 through 177. The notation includes various musical notes, rests, and dynamic markings (mp, mf, pp). A 'China' cymbal is indicated on the Perc staff. The staves are arranged vertically, with higher pitched instruments at the top and lower pitched instruments at the bottom.

Figure 5-B. 2002 Pit score. Each staff represents a different "main" instrument.

On pages 78-82, we discussed different ways that the pit can be set up. If you are using the "pod" style setup, each "pod" will need its own staff line on the score. Perhaps you have a marimba with a glockenspiel mounted on the front, plus a concert tom, temple blocks, two suspended cymbals, a china cymbal, and a splash cymbal. This is more of a "multi-percussion" setup. As long as you know what instruments are available to each player on their staff, you are armed with all the information you need to start writing. If you are using an antiphonal or split setup you will want to group together the instruments from each side in the score. For example, all of the instruments on side one of the pit will be in the top half of the score and all of the instruments on side two will be on the bottom half of the score.



## Detailing your scores

A detailed score is an essential ingredient for successful rehearsals and performances. Let's face it, none of us feel like we have rehearsal time to waste, but if you're handing out parts with no dynamics, articulation marks, or mallet selections, that's exactly what you're doing - wasting time. If the students learn the *notes* first, then you add dynamics later, the parts will feel different to their muscles, making them essentially re-learn the parts. Yes, sometimes it's fun to experiment with parts and try new dynamics or accents, but it's not a good writing strategy! Also, letting the students study a detailed score allows them to see the big picture (peaks, valleys, phrase structure, and so on). With the sophisticated playback features of some of today's music notation software, like Finale or Sibelius, you can get a good idea if you're headed in the right direction.

Here are some essential "details" for your score. Keep these ideas in mind when you are writing.

### Musical Directions and Indications

Any of the composer's markings from the original score should be included in your score, for example, *Allegro*, *Assez Vif*, or *Lively*. This would also include exact tempo markings.

### Dynamics

Try to be very detailed with dynamic markings; leave nothing to guess-work. Next, make sure the dynamic structure compliments the battery and wind parts. Sometimes you may feel that a phrase may look too cluttered on the page (ten crescendos and diminuendos in eight bars). In this case, simply write *shape with the direction of the line*, or *natural phrasing*. Since this type of shaping is now a part of the warm-up routine, the students will understand the process.

### Articulation Markings

Accents, staccatos, tenutos, and marcato accents should all be included in your score. These markings are what add the greatest level of detail for interpretation to your music. Take the time to think through each passage and mark it up!

### Phrase Markings

Phrase markings allow the performers to see the bigger picture of the musical score (sentences, rather than words). This can be a great help for more complicated scores when the phrase structure is not very obvious.

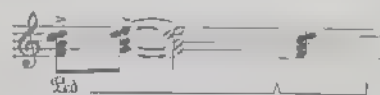
### Length of Sound

Instruments with a long sustain (suspended cymbals, tam tams, bass drums, timpani, vibes, chimes, etc) must have markings to indicate when to dampen their sound (some arrangers indicate this in scores with a small double slash //), when to let vibrate (LV), or when to taper the sound (write *taper* into the score). To taper the sound of an instrument, like a tam tam, gently place your fingers on the vibrating surface to slowly dampen the sound. This should sound like a natural decay, just faster. Tapering and dampening are crucial to ensemble clarity (see page 175).

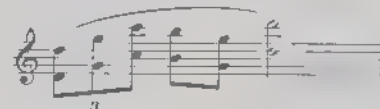
### Pedaling

Make sure pedaling marks are indicated for the vibraphones. Remember, outdoors you can be much more generous with the pedal; in fact you will seldom play with the pedal up (dry). Pedaling can be indicated in various ways:

with a pedal mark (like a piano)...



with a phrase marking (or slur)...



or with a tenuto mark for individual notes.



### Mallet Selection

If you can be as specific as writing the brand and model number of a mallet, then do it! If you don't know what kind of mallets the group you're writing for uses, then describe what you want. For example, medium-hard yarn or soft rubber. This is an important part of your sound production; think this through!

### Stickings

If you have the time to play through the parts (which is always a great idea), write in some suggested stickings. The students may end up changing these, but it may save some time on the trickier passage work.

### Tuning

Adding a tuning scheme for your timpanist (especially younger timpanists) can help them get the right notes on the right drums. The same pitch may be played on two or three different drums, but it will sound best on only one. Having a good knowledge of timpani ranges will help you to determine this.

### Other Details

Try to get a detailed equipment list and set up diagram for the pit. This will help you through logistics issues, especially getting from piece to piece. It's also nice to know exactly what sounds you're writing for (for example a 20" Constantinople Suspended Cymbal, rather than a "Big Shiny Suspended Cymbal"). If you have the sounds *in your head* you can apply them to the music more effectively.

## Formulating your ideas

Formulating your ideas is perhaps the most important step in the arranging process. This is the time to think through all of your options. When writing for such a diverse instrumentation, it's easy to get carried away and overwrite. It can be equally tempting to simply mirror the parts of the wind players, resulting in a score that doesn't complement the overall package. The following pages will guide you in generating and organizing your ideas into score form. Now the fun begins!

### The Phrase Chart

The first step in the organization process is creating a phrase chart. This chart will include a **general analysis of what the winds and battery percussion are playing during each phrase**. This chart will allow you to see the bigger picture and flow of the entire chart. From here you can start to formulate ideas for the pit's role. Information in your chart may be as vague as "metal colors," "harp effects," "string parts from original," "tacet," or as specific as sketching in rhythms and pitches.

Phrase Nam	# of counts	Tempo	Meter	Percussion Notes	Wind Notes	Original Recording	Other Notes
1	32	QN=180	4/4	Bass ostinato, snare/tenor colors. Vibe/Mar supplement ostinato feel w/8ths	Low brass play trombone melody. Mellos play split ostinato counterpoint figure. Low Brass main melody.	String/flute counterpoint - trombone on melody	1st two bars, percussion sets up new tempo
1A	14			Continue feel, lead into next phrase with growth	continue as above	continue as above	
2	18			Melodic accents distributed throughout battery ens.	Mellos take over tromb. melody	continue as above	
2A	18			2 against 3 feel for variety, then melodic build to impact of phrase 3	Sops take over melody, mellos cover moving trumpet line	tromb still carrying melody, trumpet adding more motion underneath	
3	12			Add descending flourishes in keys and BD's, otherwise full	Full out, all sections	Rich harmonies, musical "arrival point"	Halt - impact statement
4	20			Bring it back down a bit, cym's cresc lead into phrase 4A w/sizz run. Xylo/tenor 18th ost, 2 choirs of vibe/mar to simulate sop counterpoint	Sops cover 8th note counterpoint as ostinato to setup next phrase. mellos sustain horn part	Trumpet counterpoint ostinato, blended string 18ths with flute/clar flourishes	
4A	24			Timpani, bold w/low brass statement. ostinatos continue, while battery supports melodic accents	Low brass - tromb statement over the top of sop 8th note ostinato	Continues as above w/ trombone adding B16 melodic statement over the top.	
4B	16			Full ensemble. Unison impacts in rhythm w/brass	Full ensemble. Rhythm impacts. Modulate key for better bugle range.	Arrival point of tension build	
5	57		3/4	Bass brush texture for new feel, Sn w/mids, Tenor w/baris, bass w/brass reenter, all add into build	Sop trio (9 cts), Mid-horn trio (9 cts), Baritone trio (9 cts)	Horns hand theme off to muted trp, then hand off to upper ww, hand off to string. 3 MEAS. PHRASES	9+9+9+9+12 Build/Fabricate impact at end of phrase
6	31			Snare break	tacet - perc feature	N/A	

Figure 5-C: Phrase chart from a portion of Barber's Symphony No. 1 and No. 2 production from 1999.



## Drawing ideas from the original score

If you are creating an arrangement based on a pre-existing piece of symphonic literature, the most valuable tool to have is the original score. This is where you can most effectively analyze the piece and get inside the mind of the composer. Working without a score will seriously limit your understanding of the music.

Find a resource to locate scores, whether it's your public or school library, or a sheet music retailer such as J.W. Pepper. You might also want to check out different arrangements, such as piano reductions or wind ensemble arrangements of orchestral originals.

When you get the original score, start to compare it with your band's wind score. Hopefully your wind arranger left some material in the original score for you to draw from (melodies, countermelodies, accompaniment figures). If not, it's time for a meeting with the creative staff! You can also look for fresh material in the original score's percussion, string, piano, harp, or woodwind parts.

## Drawing ideas from different recorded interpretations

Next, try to find different recordings of the piece you are arranging. It's amazing how different performers, ensembles, or conductors will interpret a piece of music. Here's a very good example. In 1997, the Santa Clara Vanguard did an arrangement of Leonard Bernstein's "On the Waterfront." There is a particular section of music where Bernstein marked the tempo as quarter note = 160 in the original score. Ironically, the recordings of Bernstein conducting this piece with the New York Philharmonic resulted in this section of music being played at 176 or faster! This tempo difference may effect how you write!

Also, do some research to find what a particular performer might specialize in. For example, listen to Mahler performed by the Vienna Philharmonic when Bernstein was conducting. Or if you are arranging a "brassy" piece of orchestral repertoire, check out recordings by the Chicago symphony. The best advice would be to get several different performances to listen to so you can find the interpretation that will work best for you.

Another great example is when SCV played the fifth movement of the Bartok String Quartet No. 4. In the original score, the viola and cello parts indicate that this driving 8<sup>th</sup> note ostinato should be ornamented with grace notes on the accents. (see figure 5-D).



Figure 5-D: Original written interpretation found in string quartet score.

Upon listening to a great recording of the Emerson String Quartet, we realized they were interpreting these grace notes in what seemed to be an unusual manner, treating them as 16<sup>th</sup> notes. In figure 5-D, notice the keyboard, snare drum, and tambourine rhythms. Compare these to the viola grace notes in figure 5-D.

Figure 5-E: Our marching percussion version of the Emerson interpretation.

None of the other recordings we listened to interpreted this figure in this manner. The Emerson interpretation gives it a very aggressive and driving personality which definitely fit our needs. Had we not listened to that particular recording, we may not have discovered this. We were also able to support this driving 16<sup>th</sup>/8<sup>th</sup> note rhythm in the battery, allowing for a cohesive musical interpretation.

For groups that are playing jazz, recordings may be your only source of information for the original piece (besides perhaps a lead sheet). Getting several quality recordings will be crucial. Then you can start the process of transcribing solos and creating comping ideas.

## Musical Functions of the front ensemble score

Now it's time to consider the **function of the pit**. Here are the main musical functions of the front ensemble (in no particular order):

- To help support existing material or provide accompaniment.
- To add a melodic voice or counterpoint to the musical ensemble.
- To provide impact.
- To provide effect or color.

On the following pages, we'll illustrate a few examples of these functions.

### To help support existing material or provide accompaniment

Most music can be broken down to two simple ingredients: melody and accompaniment. The front ensemble is capable of handling either one of these responsibilities. If the brass arranger writes all the parts (melody and accompaniment) into the brass score, it leaves little room for the pit or battery to contribute musically. For this reason, all arrangers for a particular project (wind, battery, and pit) need to **coordinate the musical roles** before they write, otherwise they are liable to step on each others toes. This usually results in everyone playing all the time, which gets old very quickly.

Let's take a look at a phrase from the 2002 *Scherzo* production of Copland's "Symphony for Organ and Orchestra." In this example, the keyboards are creating an ostinato, while the brass soloists play the main melody. These two elements create a "holistic output"; neither one can stand alone. This is a case where the voice of the front ensemble is absolutely crucial in creating the right effect. In Copland's original score, the ostinato part is split up between the clarinets and flutes. In drum corps, this transferred very well to the keyboards.

The musical score for Figure 5-F is a page from a drum corps score for the 2002 production of Copland's "Scherzo." It features a solo melody for a baritone soloist, which is supported by the pit. The pit parts include Vibe 1, Vibe 2, Mallets, and Percussion. The soloist's part is marked "only melody on the field" and "mf". The pit parts are marked "mf" and "mp". The score is written in 4/4 time and spans 18 measures. The soloist's melody is a simple, rhythmic line. The pit parts provide a rhythmic accompaniment, with the mallets playing a steady eighth-note pattern. The percussion part includes a snare drum and a cymbal, both playing a steady eighth-note pattern. The vibes play a steady eighth-note pattern. The overall effect is a rhythmic accompaniment for the soloist's melody.

pit supplies a "bed" of accompaniment for solo melody

only melody on the field

baritone soloist

Vibe 1

Vibe 2

Mallets

Percussion

Figure 5-F. From the 2002 "Scherzo." Illustrating the pit's important role in supporting the soloist.



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Figure 5-G: Pit takes the lead over brass in this example from the 2003 closer.

## To provide impact

Part of the game of "music on a football field" simply boils down to this - **VOLUME!** The sheer impact that a marching ensemble can generate is part of what makes our activity exciting. In these cases it's our job to pull out the big guns in order to supply impact that will support the rest of the ensemble. Most often, this means keyboards will not be necessary. There is a host of instruments we can use in the pit to help provide this impact: cymbals, tam tams, concert bass drums, tom toms, timpani, and so on.

Here is an example from the end of the 2002 SCV opener, "Trivandrum." You'll see the percussion part embellishing the high-density battery percussion parts. The timpani part provides some "punch" to the brass melody, and the rest of the pit is either crashing on hand cymbals, rolling on suspended cymbals, or adding impact to battery parts on the concert bass drum. This is a phrase in which the volume and energy is at a high level and simple "impact" parts are all that are needed to support the ensemble.

The musical score is a multi-staff arrangement. The top staff is labeled 'Brass reduction (concert pitch)' and shows a melodic line. Below it are staves for 'Snare', 'Tenor', and 'Bass Drum', each with rhythmic notation and dynamic markings like *f* and *mp*. The 'Cymbals' staff includes 'crash' and 'split crashes' markings. The 'Xylophone/Glockenspiel' staff has a *sf* marking. The 'Vibraphone' staff includes 'cr cym' and *mp* markings. The 'Vibraphone 2' and 'Vibraphone 3' staves include 'Sus. Cym.' and *p* markings. The 'Maracas' staff includes 'Sus. Cym.' and *mp* markings. The 'Percussion' staff includes 'cham cym', '2 crashes', 'looming', 'china cym', and '2 crashes' markings. The 'Timpani' staff includes 'concert BD (legato mallet)' and *mp* markings. The score is divided into measures by vertical bar lines, with some measures containing multiple notes or rests.

Figure 5-H: Percussion ensemble and brass reduction from an early ending to "Trivandrum" from SCV 2002.

UP FRONT - Section 5: Scoring and Arranging for the Pit



### To provide effect or color

In drum corps, we're limited to brass instruments, battery percussion, and the front ensemble. In the grand scheme of music, these are limited options. Marching bands have the added advantage of woodwinds, amplification, and electronics, but all in all, we are working with limited instrumentation in this activity. This doesn't mean we have to limit the amount of colors we can create as the pit is one of the most versatile sections for providing color! This could mean switching to different mallets or playing with a different touch. It could mean applying unusual techniques like scraping tam tams or submerging a chime into water to bend its pitch. It could mean we hammer on anvils, or shake sheet metal, have everyone play glass wind chimes, or play on loose drum heads with timpani sticks. There is an infinite amount of tonal colors in this type of percussion ensemble, it just requires imagination.

This is an example (SCV's opener from 2001) of how we created a color effect by simply utilizing hard mallets on metallic keyboards. The flourishes in the bells, Vibe 1, and Vibe 2 recreate a dramatic piccolo line from the original piece. The ostinato in the marimbas and Vibe 3 are there for continuity and are being played with medium mallets. The flourishes are being played with brass mallets on the bells and very hard vibe mallets, resulting in an almost "electric" sound.

Figure 5-1: Example from 2001 pit opener score to illustrate extreme contrast in color

## Adding color through harmonic effects

Here's an example where the harmonic motion of the ensemble is rather stagnant. Sometimes with a phrase like this it may be tough to think of something interesting to contribute, especially when it seems as if the wind parts could use a little motion. This was from the intro of the 1997 SCV Production of "Fog City Sketches." Together, the marimbas are contributing some direction and color to the phrase with their shaping and modulating rhythms. They're simply toggling between F6 (F, A, C, D) and G6 (G, B, D, E) chords. These parts aren't meant to supply the harmonic direction of the whole. They are simply there to create some motion, interest, and perhaps a little bit of tension. In this case, it's more interesting than rolling for four measures.

**A**  
♩ = 66

marimba 1  
vibe 2  
mf  
marimba 2  
RH sus cym.  
LH chimes  
mf  
marimba 3  
vibe 1  
mf  
bell tree  
small gong  
glock  
sus. cym.  
tam tam  
mf  
timpani  
(attack then roll for sustain)

Figure 5-J: Pit score from 1997 SCV introduction.

The following score samples will demonstrate basic ideas for **composing** and **orchestration**. They will also demonstrate how the setup can effect your writing.

## **Composing**

A large part of developing as an **arranger** is developing as a **composer**. In other words, there are many times when your *own* melodic or harmonic ideas may work best in your score. Here are a few pointers on composing comping passages, countermelodies, and runs. Don't be afraid to create!

## **Comping**

Keyboard comping passages are an integral part of any **jazz chart** and are seldom "written-out" in the composer's original score. To get an idea of what to write, start listening to as many different recordings as possible. Listen to the voicings that the musicians use. Are there a lot of suspensions and dissonant passages? Is there a lot of movement throughout different registers of the comping instrument? Are the chord voices all within an octave or are they scored out more "fully"? After analyzing the chord progressions of the original score, sit down behind a piano or keyboard and start to experiment with chord voicings and more importantly, which voice leading (how chord voices lead to one another) works best for you. Next, try to get an idea of what's happening rhythmically on different recordings. Are the chords sparse or very rhythmically active? When you get an idea of the style that you feel is appropriate for your chart, it's time to start writing.

Start by sketching out **what you want to do rhythmically**. Make sure the rhythm compliments, but does not interfere with or overshadow the wind or battery parts. Remember, comping is accompaniment. Yes, the parts can be very interesting and draw attention here and there, but they should not be the focus.

Next, it's time to think about the **harmony and chord voicing**. This is where the creative juices can start to flow. The key is to experiment. Add some spicy chord tones and explore all of your options. Some arrangers like to keep the chord voicing within an octave, imitating one hand of a piano player. Try to choose **voicings that feel good to play** (no uncomfortable bends to the wrist, or big stretches). Also, try to play through your parts on a vibraphone or marimba before you put them in the score. If the parts are comfortable to play, you will get the volume and fluidity you want from the players.

The final step is **articulation and length of sound**. This can provide as much flavor as the harmony. Add accents, tenuto's, staccato's, dead-strokes, you name it. Accent to tap exercises will be a great help in perfecting the performance of these passages.

The following example is from an up-tempo swing chart in the 1997 Crossmen show. Notice the detail in the score for length of sound and articulation. Also, the voice leading is composed in such a way as to create an almost "melodic" sound to the chord progressions. You'll also notice that the scoring between the marimba and vibes is very simple; this unison style approach provided some serious cutting power for these parts. You may also notice that the rack part and conga part are sparse at times. These are the times that the battery kicked in with a heavy swing feel; here it was easier for us to get out of the way and play a more complimentary role.



UP FRONT - Section 5: Scoring and Arranging for the Pit

Figure 5-K: Ancona's pit score from 1997 Crossmen (continues on next page).

A musical score for pit instruments. The staves are labeled: Glock, Croto, Vib, Mar, T + p, Congas, Ch m, and Rack. The score includes various musical notations such as notes, rests, and dynamic markings like *ff*, *f*, *mp*, and *mp.n*. There are also performance instructions like "dampen" and "toms" written above the staff lines.

## Composing Countermelodies

Unlike comping sections, countermelodies *should* draw attention. In fact, they should draw as much attention as the main melody. For this reason it's very important to consider where you insert countermelodies and how you score them. This is best coordinated with the wind arranger. Together, make sure you leave some space for the pit to interact with the winds. The pit should have their fair share of melodic and countermelodic material from the *original* score. Of course, there are always opportunities to create your own melodic passages.

It's difficult to outline the creative process, particularly when composing original material. Often the ideas come from listening to the original music and experimenting by singing new lines, or you may take a more studied approach. Here, your first step is a harmonic analysis of the wind parts. Oftentimes it's best to have your counter melodies start on or work around **different chord tones than the main melody**. This will help to bring them through the texture a little better and provide a more interesting harmonic effect overall. The next step is to think of what **rhythm** works best. Try to counteract a busy melody with a very simple countermelody or vice versa. Once again, this kind of contrast helps to bring out the voices. Also, take time to consider the **shape of the line**. Should the line ascend when the main melody descends (again, contrast) or should it mimic the shape of the main melody.

Now that you have an idea of what's happening harmonically, you know which rhythms you want to use, and you have an idea of the shape of the line, you can start to experiment with pitches. Sing through some ideas and see what sounds best to your ear. Yes, easier said than done at times, but stick with it. It's seldom done right the first time!

The final step is to score appropriately for the texture. Sometimes a solo player in the pit can get the idea across in a lighter setting. Sometimes the "all-skate" approach is used, everyone playing the melody in the fullest sounding part of their instrument. Here's an example of this fully scored approach from the 1997 Crossmen show. This is the next phrase after the comping phrase mentioned earlier. The chord progression is the same. Rather than writing another comping line, this provided some contrasting melodic lines. The winds and battery are full-out swinging; rhythmically active and playing at forte. The pit material had to be scored to be heard. This meant simple rhythms and full sounding registers on the instruments.

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Glockenspiel

Crotales

Vibraphone  
3 players

Marimba  
3 players

Timpuni

Congas

Chimes

Rack

to top of marimba 1  
med. hard yarn

to glockenspiel 2  
hard plastic

hi hat with stick  
gradually open

LV

10" splash 18"

with foot

Figure 5-L: Further pit score example from 1997 Crossmen (continues on next page).



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This musical score is for the percussion section of 'The Dance of the Hours' by Maurice Strakosky. It is a 3/4 time piece in B-flat major, consisting of 18 measures. The score is arranged for eight percussion instruments: Glock, Crota, Vibraphone, Maracas, Tom-tom, Congas, Chimes, and Rack. The first measure is marked with a double bar line (//). The second measure is marked with a forte (f) dynamic. The third measure is marked with a fortissimo (ff) dynamic. The fourth measure is marked with a mezzo-forte (mf) dynamic. The fifth measure is marked with a forte (f) dynamic. The sixth measure is marked with a fortissimo (ff) dynamic. The seventh measure is marked with a mezzo-forte (mf) dynamic. The eighth measure is marked with a forte (f) dynamic. The ninth measure is marked with a fortissimo (ff) dynamic. The tenth measure is marked with a mezzo-forte (mf) dynamic. The eleventh measure is marked with a forte (f) dynamic. The twelfth measure is marked with a fortissimo (ff) dynamic. The thirteenth measure is marked with a mezzo-forte (mf) dynamic. The fourteenth measure is marked with a forte (f) dynamic. The fifteenth measure is marked with a fortissimo (ff) dynamic. The sixteenth measure is marked with a mezzo-forte (mf) dynamic. The seventeenth measure is marked with a forte (f) dynamic. The eighteenth measure is marked with a fortissimo (ff) dynamic. The score includes various musical notations such as notes, rests, and dynamic markings. The Glock, Crota, Vibraphone, and Maracas parts are written in treble clef. The Tom-tom part is written in bass clef. The Congas, Chimes, and Rack parts are written in a simplified notation. The Congas part includes a key signature change to B-flat major in the fourth measure. The Chimes part includes a key signature change to B-flat major in the fourth measure. The Rack part includes a key signature change to B-flat major in the fourth measure. The score is a full page of music, with the first measure marked with a double bar line (//) and the last measure marked with a double bar line (//).

## Composing Runs

What would drum corps be without some high speed runs on the keyboards? Practicing all summer long, today's pit performers can finish the season with an ungodly amount of chops. While there are much more difficult techniques to display in four-mallet independence, runs are ironically the sections where audiences and judges like to "oooh and ahhh." There is *probably* no harm to this; runs are flashy, and people like to hear them. Nothing wrong with that...

Writing runs is usually the sole responsibility of the pit arranger. Often, the original scores don't contain this musical embellishment. To create runs from scratch, use the same process you used to create counter melodies in the previous section. Start with a harmonic analysis of the wind parts, experiment with the rhythm and what chord tones you want to start on, create a shape for the line, then start to experiment with pitches. Finally, decide how it should be scored (thick texture, thin texture, etc.)

Here's an example from the 1998 SCV Opener. You'll see the sequence in the brass parts modulating up a minor-third every two bars. These are simple, major-chord harmonies (with a minor 7<sup>th</sup> adding tension on the downbeat of each two-bar sequence). The trick is to find a scale mode which fits into this harmonic structure. Also, since the run is made up of a series of quick 16<sup>th</sup> notes, it's important for it to "fit" on the instrument so the players can navigate through the bars without awkward interval jumps.

The musical score is divided into two main sections. The top section, marked with a box 'R' and measure numbers 190-194, is a brass reduction. It features five staves: Brass (concert pitch), Marimbas/Xylophone/Vibe, Percussion (2 players), Chimes, and Timpani. The brass parts show a sequence of major chords (F major, G major, A major, B major, C major) with a minor 7<sup>th</sup> on the downbeat of each two-bar sequence. The keyboards play a fast 16<sup>th</sup> note run. Dynamics include *mf*, *f*, and *ff*. Performance instructions include *gradual crescendo*, *sus. cym.*, and *gradual crescendo*. The bottom section, marked with a box 'S' and measure numbers 195-200, is the primary pit score. It features six staves: Br (Brass), Kybds (Keyboards), Perc (Percussion), Ch (Chimes), and Tun p (Timpani). The brass parts show a sequence of major chords (F major, G major, A major, B major, C major) with a minor 7<sup>th</sup> on the downbeat of each two-bar sequence. The keyboards play a fast 16<sup>th</sup> note run. Dynamics include *mf*, *f*, *ff*, and *sfz*. Performance instructions include *sus. cym.*, *Crash Cymbals*, *tam tam*, and *bass drum*.

Figure 5-M: Brass reduction and primary pit score from the end of the 1998 SCV opener.

Composing runs continued...

Look at the first two bars. The brass is playing an E-flat major chord, with a minor 7<sup>th</sup> (D-flat) appearing on the downbeat. This minor 7<sup>th</sup> quickly moves to the tonic pitch of E-flat. We can base our run off of an E-flat major scale with the 7<sup>th</sup> scale degree flatted (D natural becomes D-flat). This results in an E-flat Mixolydian scale. Using this scale as our pathway, all we need to do now is create an appropriate shape.

Figure 5-M<sup>1</sup>: First two bars of this phrase. E-flat Mixolydian scale fits best with brass.

Now look at the next two bars. The brass parts are the same, only they've moved up a minor third in the harmonic sequence. Here, the run is based on an F-sharp Mixolydian scale (Major scale with the 7<sup>th</sup> scale degree being flatted).

Figure 5-M<sup>2</sup>: Next two bars of this phrase. F-sharp Mixolydian scale fits with brass.

The next two bars continue along in the same manner, based on an A-Mixolydian scale.

Figure 5-M<sup>3</sup>: Next two bars of this phrase. A-Mixolydian scale fits best with brass.



The last two bars follow the brass chord progression of: **E-flat major** to **F-major** resolving to **G-major**. Since this progression goes by so quickly, we'll stick to one scale for the keyboard runs. By using an F-Mixolydian scale, it fits well with the first brass chord (E-flat major) as well as the second brass chord (F-major). Starting the first bar on a B-flat helps to enforce the top brass note (the 5<sup>th</sup> of E-flat major). Starting the second bar on an F helps reinforce the tonic of the F-major brass chord. Finally, since the resolving brass tonality is G-major, we end the keyboard run on a G. Obviously, if we want to be sure to strike crucial points in the run on certain pitches, the motion in which we arrive there will need to be considered. Sometimes that's the trickiest part in writing runs.

The musical score consists of two staves. The top staff is labeled 'Brass (concert pitch)' and the bottom staff is labeled 'Keyboard Runs'. Both staves are in 4/4 time. The Brass staff has a key signature of two flats (B-flat and E-flat) and a common time signature. The Keyboard staff has a key signature of one flat (B-flat) and a common time signature. The first bar of the Brass staff starts with a B-flat note and ends with a B-flat note. The second bar of the Brass staff starts with an F note and ends with an F note. The Keyboard staff has a continuous run of notes. The first bar of the Keyboard staff starts with a B-flat note and ends with a B-flat note. The second bar of the Keyboard staff starts with an F note and ends with an F note. The Keyboard staff is marked 'ff' and the Brass staff is marked 'fff'.

Figure 5-M4: Next two bars of this phrase. F-Mixolydian scale fits best with brass.

Though this sounds like a complicated thought process, it really isn't. A music theory background is helpful, but more importantly you can still create runs by noodling and experimenting on the keyboards. MIDI playback features and notation software can also be great tools. With your software, try pasting the wind melody into a separate staff on your score to hear your parts in conjunction with the wind parts.

Once again, it's a good idea to play through your parts to be sure they are attainable at the desired tempos. This will effect how well they cut through the ensemble, as well as the quality and consistency of sound from player to player.

## Harp Effects

Here is an example where the keyboards can supply a dramatic addition to the musical texture. This is a slightly different approach to the "runs" section we discussed earlier. Obviously, you don't see many harp players on the marching band field. Sometimes it's interesting to have the keyboards imitate the sweeping sound of harp glissandi by playing arpeggiated runs up and down the range of the instruments. It's certainly not always musically appropriate, but in the right situations, it can supply a wonderful effect.

This next example is from the 1999 SCV production of "Andante Tranquillo," from Barber's *Symphony No. 1*. In the original score, I discovered the triplet to "fivelet" motif (Marimba 1) in the clarinets and bassoons. On all the recordings I've heard, I can never really pick this part out; it's more atmospheric than anything. I decided to use that as a basis for a running line to create one of these fluid "harp" effects. Using soft mallets, and exploring the full range of the keyboards, this was a wonderful moment (though extremely difficult to perform) for the 1999 front ensemble.

## UP FRONT - Section 5: Scoring and Arranging for the Pit

From rehearsal B to C you'll see the original clarinet/bassoon line in Marimba 1 (Aimee), and Marimba 3 (Ryan). The other three running parts are playing augmented rhythms (8' note triplets and 16' note fivelets), while playing arpeggiated harmonies of C major (first three bars), A-flat major (fourth bar), B-flat major (fifth bar), back to C major (last bar of B). From rehearsal C to D, you'll see the players switch roles (for a change of timbre). Now the original part switches to Vibe 1 and Vibe 3 (Nate and Laura), and the sweeping, faster part moves to Marimba 1 and Marimba 3 (while staying in Vibe 2 - toward the center of the pit). These running lines continue to outline the harmonic progression of the brass score as the phrase evolves.

You'll also notice the melody being outlined by the crotales and chimes, while the timpani mimic the double bass part in the original score. This may appear to be one of those sections with too many things going on at once, (a separate topic we'll discuss later). While this could surely be debated, I think this works well since the wind parts are so long and drawn out. The front ensemble supplies all of this rhythm while still outlining the melody and harmonic structure. Because the keyboard parts are being played with softer mallets, the players can open up their strokes for a lush, resonant sound.

The musical score is for a pit ensemble and includes parts for Marimba 1, Vibe 2, Vibe 1, Vibe 3, Marimba 3, Marimba 2, Crotales & Chimes and Synchronized, Chimes, Tam Tam, and Timpani. The tempo is marked J=120. The score is written in 4/4 time and features complex rhythmic patterns including triplets and fivelets. The dynamics range from f (forte) to mf (mezzo-forte).

Figure 5-N: "Andante Tranquillo" section from the 1999 SCV show.

UP FRONT - Section 5: Scoring and Arranging for the Pit

Amie

Jon

Nate

Calvin

Ryan

Angela

Kristen

Rick

Amie

Jon

Nate

Calvin

Ryan

Angela

Kristen

Rick

Sax Cym

Mark Tree

Sax Cym

Sax Cym



## Orchestration concepts

### Writing Harmonic Mallet lines

Sometimes it's more appropriate to take a single melodic line and have it played in harmony with another line. It can create a thicker texture and add more interest. Since this technique may slightly reduce the amount of keyboard projection, it's not something you want to rely on for a majority of your show. Harmonizing keyboard lines is usually best appreciated in situations where the keyboards can be heard clearly. Often it's easiest to write the main (top) melodic line, then harmonize with a second line by writing in thirds or fourths below the main line. Here are a few examples of some keyboard lines that have been used in past arrangements.

Figure 5-0 is a musical score excerpt from the 1999 SCV opener. It features six staves: Vibe 1, 3; Xylo; Mar 1; Mar 2; Mar 3; and Timp. The tempo is marked as quarter note = 160. The score illustrates "quartal" harmonies, where harmonic lines are parallel in motion but separated by an interval of a fourth. The notation includes various musical symbols such as notes, rests, and dynamic markings like *f*.

Figure 5-0: This excerpt, from the 1999 SCV opener uses "quartal" harmonies. These are harmonic lines that are parallel in motion, but separated by an interval of a fourth.

Figure 5-P is a musical score excerpt from the 2000 SCV intro production. It features six staves: Vibe 1; Mar 1, 3; Vibe 2; Mar 2; and Timp. The tempo is marked as quarter note = 84. The score illustrates arpeggiated chords, where the notes of a chord are played in sequence rather than simultaneously. The notation includes various musical symbols such as notes, rests, and dynamic markings like *mf*.

Figure 5-P: In this excerpt from the 2000 SCV intro production, you'll see the sixtuplet lines are actually arpeggiated chords. Rather than being played in unison, they are performed in inversions. The harmonies are the same, but the starting point within the arpeggios is different.

## Using the instrument's best range

Don't be afraid to spend a fair amount of time experimenting with the **ranges** of keyboard lines. When writing, it's good to have each instrument's **characteristic sound** in your head, so you can write the parts in a range that blends well and projects. Just for fun, imagine what a medium soft marimba mallet will sound like in the upper-most range of the instrument. It'll sound kind of fluffy, right? Now imagine using that same mallet in the lower range of the instrument. You can probably imagine a more resonant sound, and more pure fundamental tone from the bar simply because the mallet is more appropriate for the range. These are things you need to think about when writing. Have an idea of what timbre will result from writing too high, or too low.

You might also find it helpful to consider the instrument's **transposing qualities** to determine in what range it will sound best. For example, since a xylophone sounds one octave higher than written, this phrase (which appears as a unison line between xylophone and marimba), would actually sound in octaves. This is a handy scoring technique to get more projection. If you want more sound out of a singular line, you'll find it helpful to have the keyboard lines spread out among an octave or two.

Figure 5-Q shows a musical score for three instruments: Mar 3, Mar 2, and Xylo. The tempo is marked as quarter note = 180. The Mar 3 and Mar 2 staves are in treble clef, and the Xylo staff is in bass clef. The music is a unison line across the three instruments, with Mar 2 written an octave lower than Mar 3.

Figure 5-Q: To add more fullness and warmth to this line, marimba 2 is written down an octave from marimba 3. Between the xylophone's natural transposition (one octave higher than written), the marimba 1 line (sounds as written), and the marimba 2 part written an octave lower, you'll have three keyboard players performing the same line in three different octaves. This will create a very full sounding phrase.

**Timpani ranges** are limited on each drum, however the heads usually sound their best at higher tensions. For example, a C on the 29" drum will sound much better than a C on a 26" drum. You should try to factor this into your writing. Also, you might find it beneficial to play certain **timpani impacts in octaves**. Another method would be to write for a unison double stop on two different drums for more projection. If you choose to use these doubling methods, be sure there is enough time to tune accordingly. A good timpanist can do this quickly, but if your timpanist isn't very experienced, you should allow enough time for them to set their pitches. For a general reminder of timpani ranges, refer to the timpani range chart on page 22.

Figure 5-R1 shows a musical score for a single staff with a unison double stop on two different drums. The tempo is marked as quarter note = 180. The music is a unison line across the two drums, with the first drum written an octave lower than the second drum.

Figure 5-R1: Timpani impacts in octaves

Figure 5-R2 shows a musical score for a single staff with a unison double stop on two different drums. The tempo is marked as quarter note = 180. The music is a unison line across the two drums, with the first drum written an octave lower than the second drum.

Figure 5-R2: Timpani impacts in double-stops (same pitch, two drums)

## Overwriting

For an arranger who is trying to be creative, overwriting can be one of the most difficult things to avoid. **Remember, as a pit arranger you are merely writing for one portion of the entire musical ensemble.** Because of this, if the pit score has too much counterpoint within itself, or contains too many ideas, the outcome will most likely become overlooked. All the intricate parts you spent so much time creating will become lost within themselves, not to mention the rest of the ensemble.

**Projection** is one important reason to avoid overwriting. The more people you have playing one idea, the more it will be heard within the ensemble. If you only have one performer playing a musical idea on marimba, it's quite possible their sound will never be heard.

Sometimes we overwrite simply because **we think we're supposed to write challenging parts in order to compete.** This is where the competitive affects of the drum corps and marching band activities can hamper good musicianship. It's important that arrangers write parts that will challenge their students, but it should not be done at the expense of the music's purpose. Try to find a balance. The music doesn't have to be full of fast licks to be musically and technically challenging.

Let's take a look at a sample from the 2001 SCV opener. In this production, the keyboards were very important in creating an incessant ostinato underneath a long series of syncopated, short brass rhythms. To create interest, we attempted to write a "run" section in which the two sides of the pit were playing a series of short, ascending runs in a contrapuntal fashion. The intent was two-fold: 1.) Create interplay between the opposing voices by emphasizing the attack of each entrance, which would also correspond to certain brass accents. 2) Create an overall composite texture which results in constant running 8<sup>th</sup> notes, mimicking the ostinato that preceded this phrase. By the end of this run section, these opposing parts would morph into each other and culminate in an ascending harmonic run, and keyboard players across the world would worship us...

Well...this seemed like a good idea at the time, but it didn't really work. First, the tempo was so fast, it became difficult to audibly grasp the interplay of the opposing lines. Also, the composite texture, while successfully creating constant 8<sup>th</sup> notes, sounded more confusing than meaningful, and became difficult for the performers to listen to. It wasn't the main musical focus either, so even if it did prove successful, it may have competed with the important brass parts for the listener's attention. We view these sort of mistakes as educational – lessons we learn that eventually make us better arrangers.

Let's examine: Xylophone, Glockenspiel, Vibe 2, and Marimba 2 are playing LINE 1. Vibe 1, Marimba 1, and xylophone 2 are playing LINE 2. The Marimba 3 and Vibe 3 parts are chugging away with an ostinato from the previous phrase (one part is a series of four notes, and the other is a series of three notes).



$\text{♩} = 152$

Run - LINE 1  
4 players (G1, X, V2, M2)

Run - LINE 2  
3 players (V1, M1, X2)

vibe 3

Mar 3

Run - A

Run - B

V1

M3

Figure 5-S1: Original version with too much complex counterpoint between running lines.

Here's what this phrase became after altering it to more appropriately fit the music. The ending ascending run still exists, but the path to get to it is dramatically simplified, clearing the floor for the appropriate focus to be placed on the brass section.

$\text{♩} = 152$

Sanz Run - LINE 1  
(V1, M2, X, V3)

Sanz Run - LINE 2  
(M1, X, M3)

Figure 5-S2: After some heavy trimming, the parts looked something like this.

## UP FRONT - Section 5: Scoring and Arranging for the Pit

### Overwriting continued...

Here's another example where overwriting cluttered the ensemble. This is an excerpt from the 1996 SCV production of "La Mer." Observing the pit score, it doesn't necessarily appear to be overwritten. However, this is a case where it's important to note the pit's role in relation to the rest of the ensemble. In our brass arrangement, these four bars were designed to sound bold and triumphant; an impact! The running triplet to 8<sup>th</sup> note part in the xylophone was taken from the strings in Debussy's original score, as well as the timpani part and the quarter note triplet melody seen in the Marimba 2 part. The problem isn't that these parts are inappropriate. It's just that during an impact moment on the marching field, sometimes the intent is more clearly heard by *eliminating* musical ideas that aren't as prominent in the original. It's merely a matter of identifying the **main musical priorities**, and letting them do the work.

The image shows a musical score for a marching band pit. The score is for measures 170-171. The instruments listed on the left are: Brass reduction (concert pitch), Snare, Tenor, Bass, Cym, Colby, Robin, Maru, Kuhl, Leah, Erin, Tanyu, Vloce, and Pat. The score includes various musical notations such as triplets, eighth notes, and dynamic markings like 'ff' and 'f'. The tempo is marked as '♩ = 170'.

Figure 5-T1: Reduction score from the 1996 closer. This is the original version with a few too many things going on.

## UP FRONT - Section 5: Scoring and Arranging for the Pit

Since the timpani, battery, and impacts on measures 2 and 4 are the most driving and dramatic ideas, we have to choose between the two opposing mallet lines; one or the other should disappear. We chose to keep the quarter note triplet line as it was a wide open rhythm, more closely related to the timpani part, and supplied some thematic hints to a low brass melody which appears two bars later. This revision was much clearer, and in turn, created more impact.

The musical score is for a pit ensemble, featuring ten staves for different instruments. The tempo is marked as  $\text{♩} = 170$ . The key signature has one flat (B-flat), and the time signature is 4/4. The instruments and their parts are as follows:

- Colby**: xylo (mallets 1 and 2), *ff*
- Robin**: mar 2 (mallets 1 and 2), *ff*
- Maria**: vib 2 (mallets 1 and 2), *ff*
- Kim**: BD/Tam (bass drum/tam-tam), *ff*
- Leah**: crolaes (crotales), *ff*
- Erio**: vib 3 (mallets 1 and 2), *ff*
- Tanya**: glock (glockenspiel), *ff*
- Vince**: mar 1 (mallets 1 and 2), *ff*
- Pat**: (bass line), *ff*

The score includes various musical notations such as triplets, slurs, and dynamic markings (*ff*). The instruments are arranged in a vertical stack, with Colby at the top and Pat at the bottom. The notation is clear and legible, with a focus on the rhythmic and thematic elements of the score.

Figure 5-T2: Adjusted version of the pit score resulted in a clearer presentation of ideas.



## Considering how the setup will affect the overall sound

It's pretty safe to say that no two front ensembles have exactly the same setup. When writing, you'll find it very helpful to keep a "map" of the pit nearby so you know where the music is going to come from. Simply draw a rough sketch of the pit, and label each instrument with the player's name.

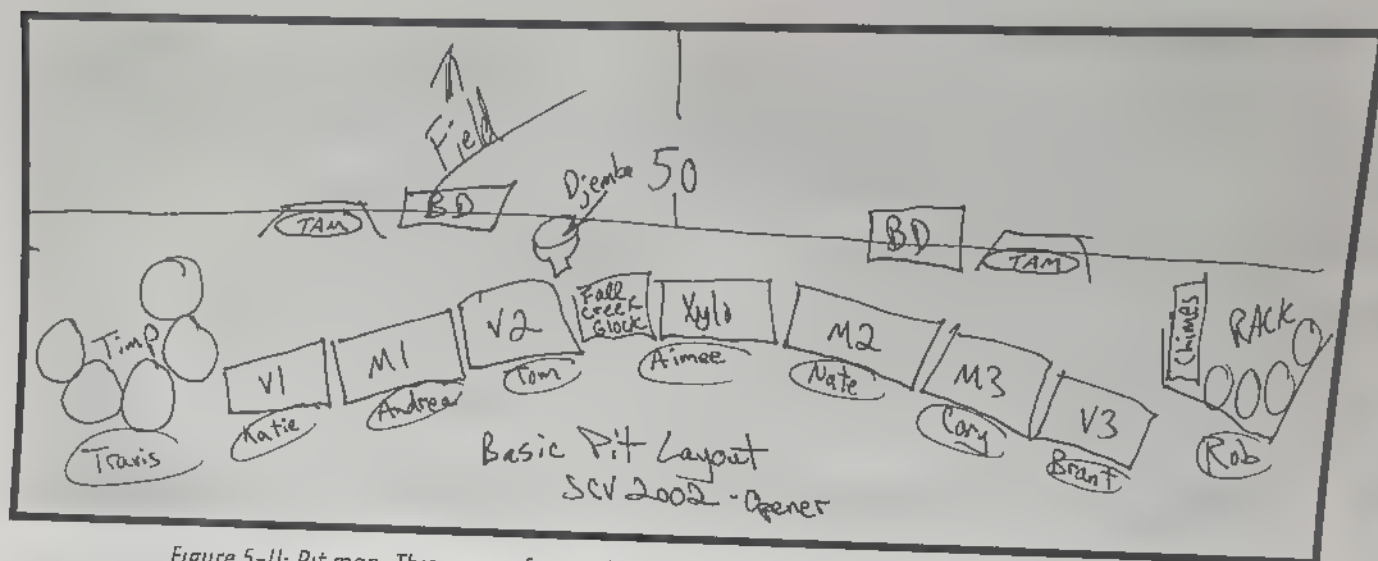


Figure 5-U: Pit map. This scrap of paper is never far away during the arrangement process.

Here's one consideration. It's often helpful to have people who are playing similar parts stand next to each other so they can more effectively listen. We refer to these as **choirs** or **"teams."** By positioning players closer to each other, their musical material will be weighted more heavily in that general area of the pit. If you want a "full pit" sound, be sure that the entire pit is contributing to the material being played. Otherwise you might find that certain phrases have a lop-sided balance in relation to others.

On the other hand, you may find it interesting to spread the parts around so they cover more territory. Sometimes by doing this, you can achieve a bigger sound. Here's an example where Vibe 1 and Vibe 3 are playing the same part on completely opposite ends of the pit. The benefit here is that we get a "stereo" sustain effect with such a large geographical spread. The down side is that it makes it extremely difficult for the players to hear if they are playing together. The farther they're spread, the harder it is to communicate. The players must learn to use their instincts and some visual cues to play accurately.

**B**

$\text{♩} = 108$

Glock. *mf*

Vibe 1 *f*

Vibe 2 *mf*

Vibe 3 *f*

Mar 1 *mf*

Mar 2 *mf* *crotales (hard plastic)*

Mar 3 *mf*

Perc *mf* *ch: men*

Imp *mf*

Figure 5-V: Referring to the "pit map" on the previous page, notice how the intricate part played by glock, V2, and M1 is written to be played in the same geographic location within the pit. V1, V3, and M2 actually have the most difficult part here since they're spread much farther apart. In the case of V1 and V3, this is quite intentional to achieve a nice "spread" to the vibraphone sound.

## UP FRONT - Section 5: Scoring and Arranging for the Pit

Here's another consideration: Let's say most of your keyboards are playing a similar part, and you want them to provide a full sound. By **revoicing parts** between players who are standing next to each other, you can achieve more fullness. In this example, you'll see Marimba 2 and 3 (located next to each other) are playing a similar sticking and harmonic idea. But because their parts are voiced differently, we have more tone bars ringing simultaneously, resulting in a fuller sound. To round it out, Marimba 1, on the other side of the pit (and closer to the timpani) is playing an octave lower than Marimba 2. Essentially, we have the "lows" on the left side of the pit, and the "highs" on the right. To cap it off, the flourish in the glockenspiel, and Vibe 1 and 2 comes mostly from the center of the pit. It's a fast run that will require precision from the performers, so Vibe 1 (separated by Mar. 1) has the toughest job here.

The musical score is for a percussion ensemble, specifically for a section titled "Figure 5-W" from the 2002 film "Trivandrum." The score is written for nine parts: Xylo Glock, Vibe 1, Vibe 2, Vibe 3, Mar 1, Mar 2, Mar 3, Perc, and Timp. The tempo is marked as 172. The key signature has one flat (B-flat). The score features a fast, rhythmic pattern across the vibraphone and marimba parts, with dynamic markings like *mp*, *mf*, and *pp*. The Vibe 1 part has a flourish marked "China". The Mar 1 part is an octave lower than Mar 2 and 3. The Perc part has a flourish marked "China". The Timp part is marked *mp*.

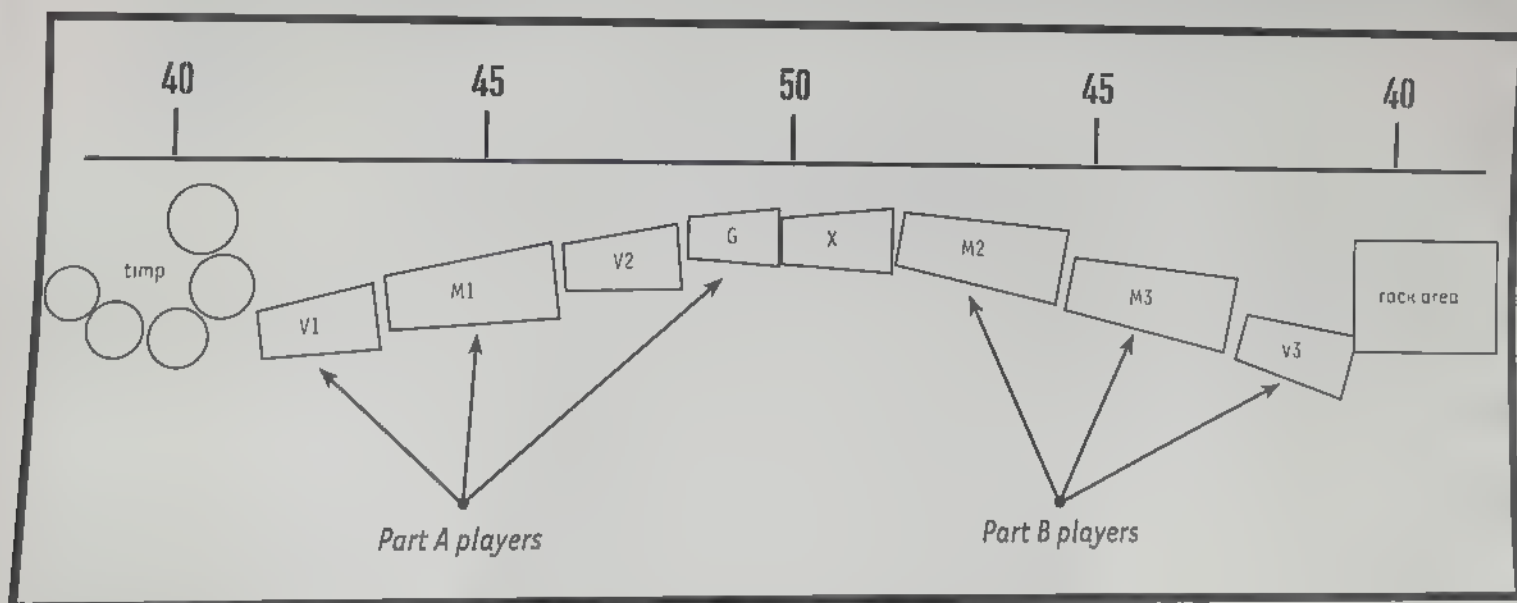
Figure 5-W: From 2002's "Trivandrum." By voicing Marimba/V3 accompaniment differently, a fuller sound is achieved.



## Antiphonal Effects

To create stereo effects, it's once again important to have a visual "map" of the pit. Sometimes it's fun to write so that each side of the pit converses back and forth. This concept can be particularly effective if you are utilizing a split pit setup. The more geography between the opposing elements, the more obvious this effect will be. This can also be an excellent effect when coordinated with the marching musician's drill. This will require a lot of planning with the drill designer and wind arranger. If done effectively you can create dramatic stereo effects with the entire musical and visual ensemble.

Here's a somewhat subtle example of this. It's a phrase from the 1999 SCV opener in which you'll see a rhythmic, droning ostinato in the timpani and tambourine. The keyboards are trading melodic 16<sup>th</sup> note runs and quarter note triplets for ornamentation and support of the brass melodies. When they are NOT performing these, they are contributing to the droning ostinato, in a softer, more accompanimental fashion. The louder, running parts are played with a different touch and higher dynamic to make the antiphonal effect more obvious. **Part A (pan left)** is being played by Vibe 1, Marimba 1, and Glockenspiel. **Part B (pan right)** is being played by Marimba 2, Marimba 3, and Vibe 3. Looking at this diagram of the pit, you'll see how the separation of the instruments dictated which players played which parts seen in Figure 5-X.



[G]  $\text{♩} = 166$

Vibe 1 (A.mee)

Glock (Jennie)

Vibe 3 (Nate)

Mar 1 (Laura)

Mar 2 (Ryan)

Mar 3 (Angela)

Perc. (Kristen)

Timp (Rich)

V1

G

V3

M1

M2

M3

P

T

The musical score is divided into two systems. The first system, starting with a key signature change to G major and a tempo of 166 beats per minute, includes staves for Vibe 1 (A.mee), Glock (Jennie), Vibe 3 (Nate), Mar 1 (Laura), Mar 2 (Ryan), Mar 3 (Angela), Perc. (Kristen) playing tambourine, and Timp (Rich). The second system continues with staves for V1, G, V3, M1, M2, M3, P, and T. The score is characterized by complex rhythmic patterns and dynamic markings such as *ff*, *mp*, and *mf*.

Figure 5-X: From the 1999 SCV opener where two sides of the pit converse. While one side takes the "lead" material, the other side accompanies with the timpani/tambourine ostinato pattern.

## Metal to wood effects

Two of the most obvious timbral differences we have at our disposal are the contrasts between metal (vibe, crotales, bells, chimes, etc) and wood (xylophone, marimba) instruments. Some basic concepts of this writing style would include creating very "bright" metallic colors using hard mallets on vibes and bells, contrasted with softer mallets on wood colors for more warmth. Or perhaps the opposite mallet and timbre choice might best fit the music. Another option is to contrast the long, sustained sounds of chimes, bells, and vibraphones with the shorter sounds of the xylophone and upper register of the marimba. Either way, one thing is certain, you can create some interesting timbre changes and contrasts with this type of writing.

The musical score excerpt, labeled [17], is for a percussion ensemble. It features the following parts and notation:

- Gong:** A single line with a few notes.
- Xylo/Congas:** A line with a tempo marking of  $\text{♩} = 168$ . It includes a bracketed section labeled "to crotales (color vibe sound)" with dynamics *mp* and *mf*.
- Vibe 1:** A line with sustained notes and dynamics *mf* and *f*.
- Vibe 2:** A line with sustained notes and dynamics *mf* and *f*.
- Vibe 3:** A line with sustained notes and dynamics *mf* and *f*.
- Mar 1:** A line with a driving rhythmic pattern.
- Mar 2:** A line with a driving rhythmic pattern.
- Mar 3,4:** A line with a driving rhythmic pattern.
- Timpani:** A line with a driving rhythmic pattern.
- Rack/Peri:** A line with a driving rhythmic pattern, including a section labeled "Flat Ride" and a "snare" mark.

Figure 5-Y: Pit score excerpt from the 2002 Crossmen opener which takes advantage of metals vs. woods and sustained sounds vs. driving rhythms. The marimbas are playing a driving rhythmic ostinato (with some help from the timpani), while the vibes and crotales play long, sustained echo effects. The rack player adds some groove and color.



25

23

Glock.

Xyl *bc us*

Vib. 1 *to xylophone + hard mallets*

Vib. 2 *1/2 pedal*

Vib. 3 *1/2 pedal*

Mar 1 *cresc.*

Mar 2 *cresc.*

Mar 3,4 *cresc.*

Timp *cresc.*

Rack

17" *mp*

17"/19" *f*

17" *cowbell*

low tom *f*

10" 8" *sharp*

15" *china*

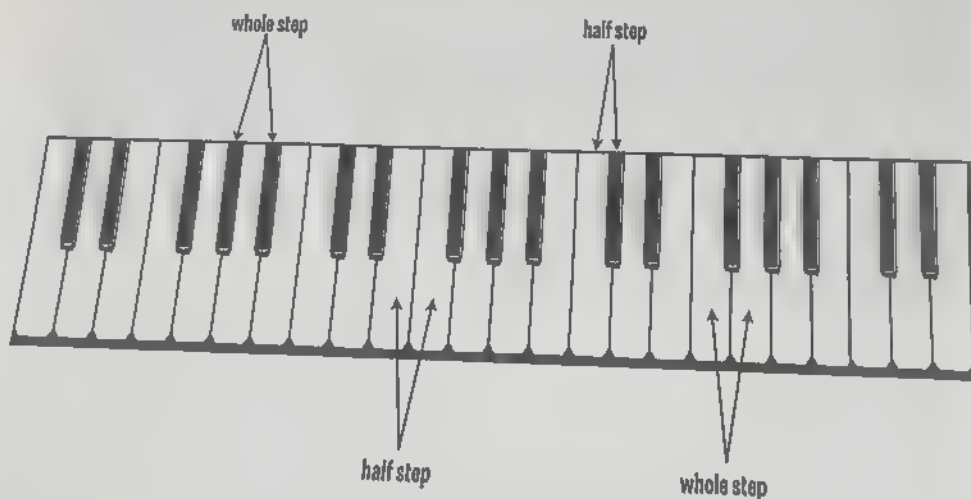
*p*

## Theory Overview

Working in the pit environment requires at least a basic knowledge of the fundamentals of music theory. This theory overview will provide you with the basics on intervals, scales, and chords. We won't get into the rules of harmony and voice leading. If these concepts are of interest, there are many excellent music theory text books available, including many designed for people with little experience.

### Whole Step - Half Step

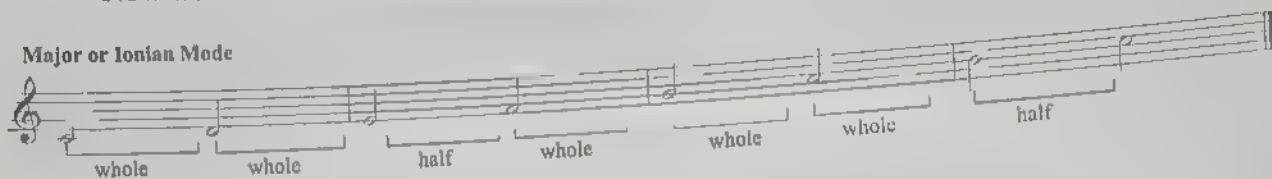
Understanding whole steps and half steps will provide a foundation for understanding intervals and scales. A **half step** is the distance between any two consecutive notes on the keyboard. For example, from F to F-sharp, or from B to C. As you may have guessed, the distance of a **whole step** is simply two half steps combined. For example, from F to G, or from B to C-sharp.



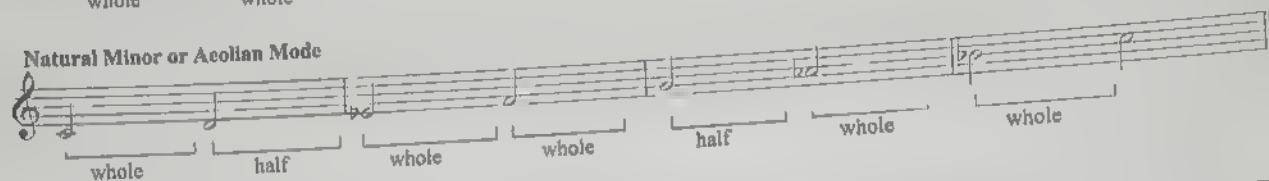
## Scales and Modes

Now we can combine whole steps and half steps to create any of the scales or modes.

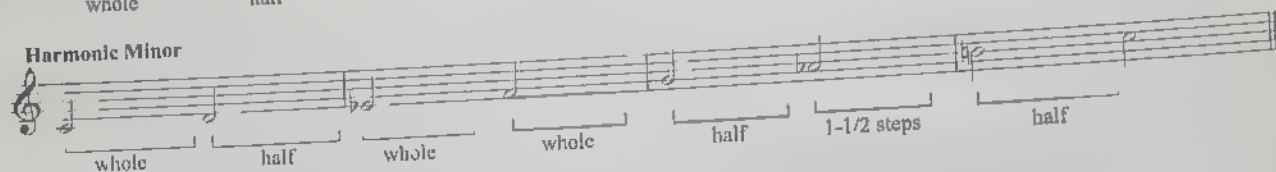
Major or Ionian Mode



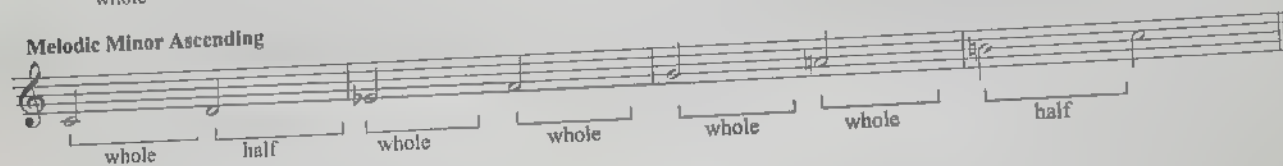
Natural Minor or Aeolian Mode



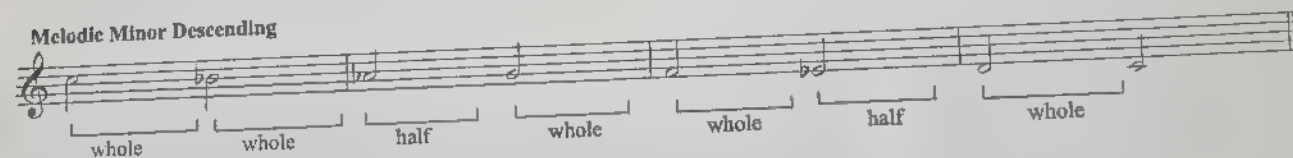
Harmonic Minor



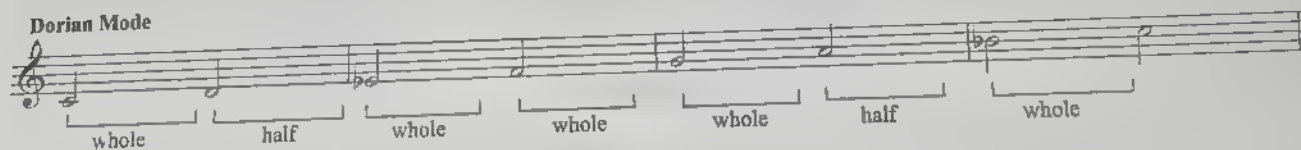
Melodic Minor Ascending



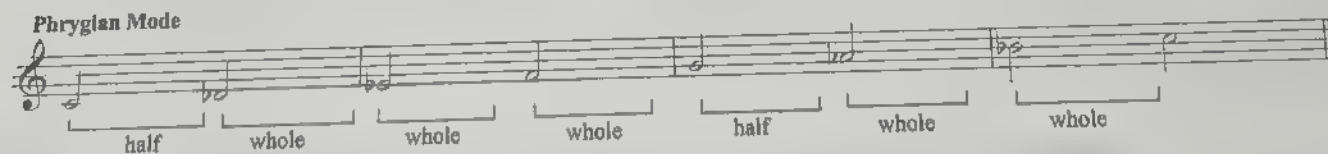
Melodic Minor Descending



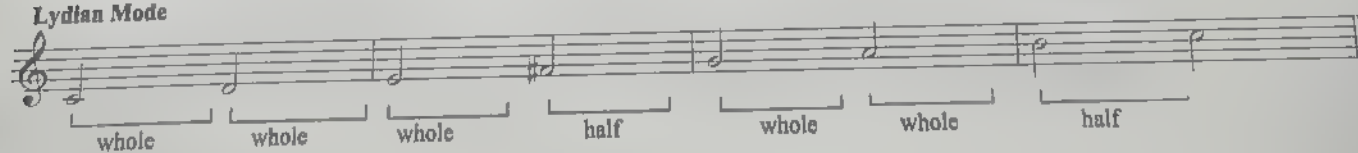
Dorian Mode



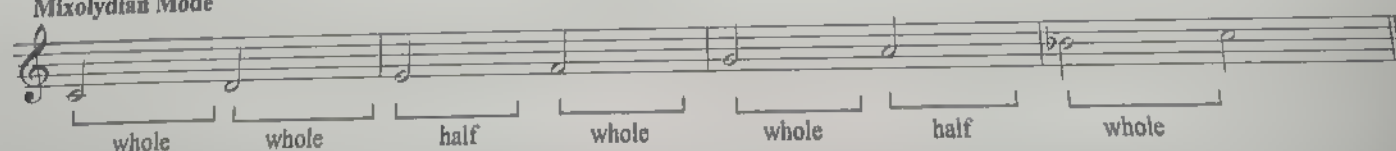
Phrygian Mode



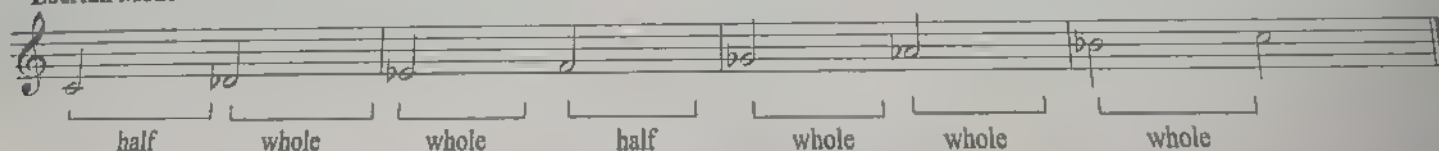
Lydian Mode



Mixolydian Mode



Locrian Mode





## Intervals and Interval Qualities

Understanding whole steps and half steps will allow you to work in general terms. The next level of understanding is identifying intervals and their quality. Below are all the intervals within an octave. This is important information for all **timpanists** as they should be able to sing any interval in either direction.

**Minor Second**

Ascending      Descending

half step      half step

**Major Second**

whole step      whole step

**Minor Third**

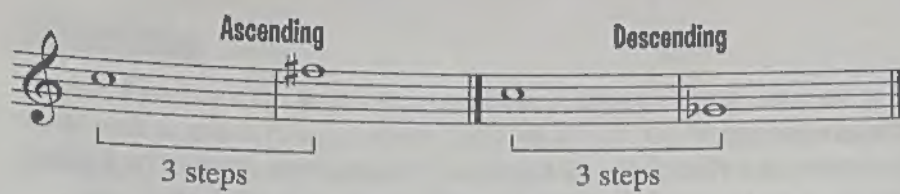
1 1/2 steps      1 1/2 steps

**Major Third**

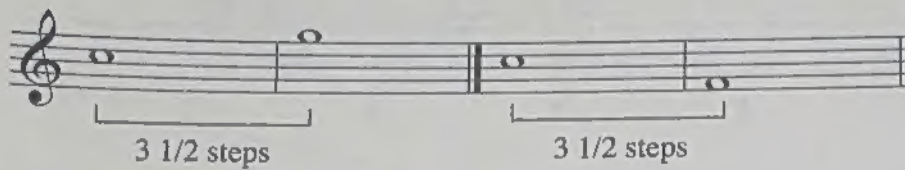
2 steps      2 steps

**Perfect Fourth**

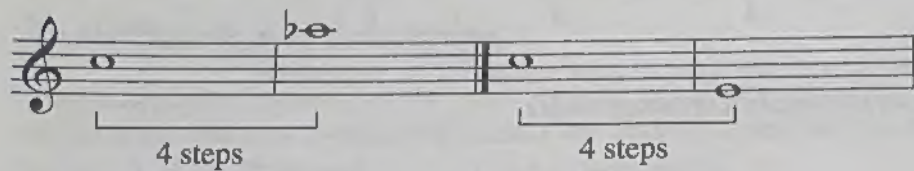
2 1/2 steps      2 1/2 steps



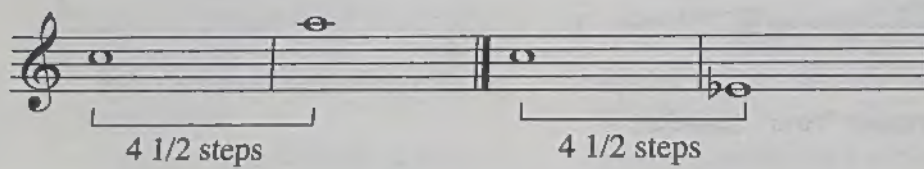
**Augmented Fourth or Diminished Fifth (aka "tri-tone")**



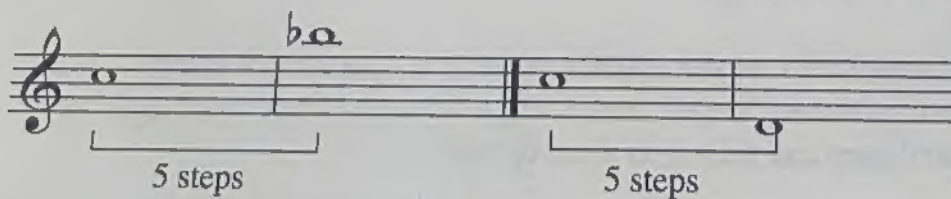
**Perfect Fifth**



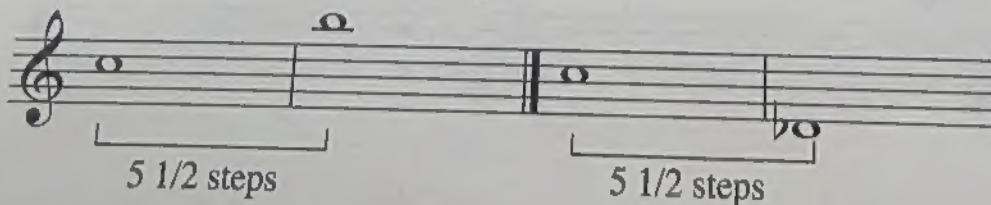
**Minor Sixth**



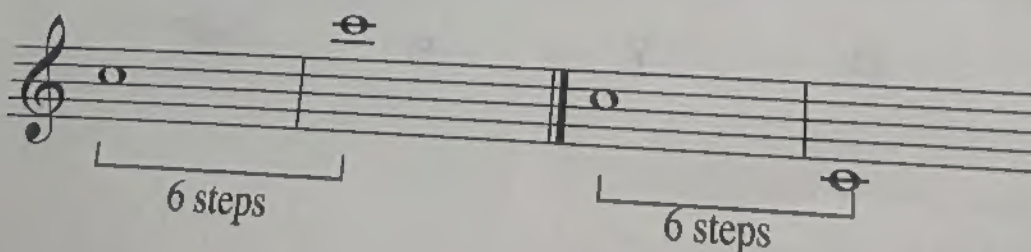
**Major Sixth**



**Minor Seventh**



**Major Seventh**

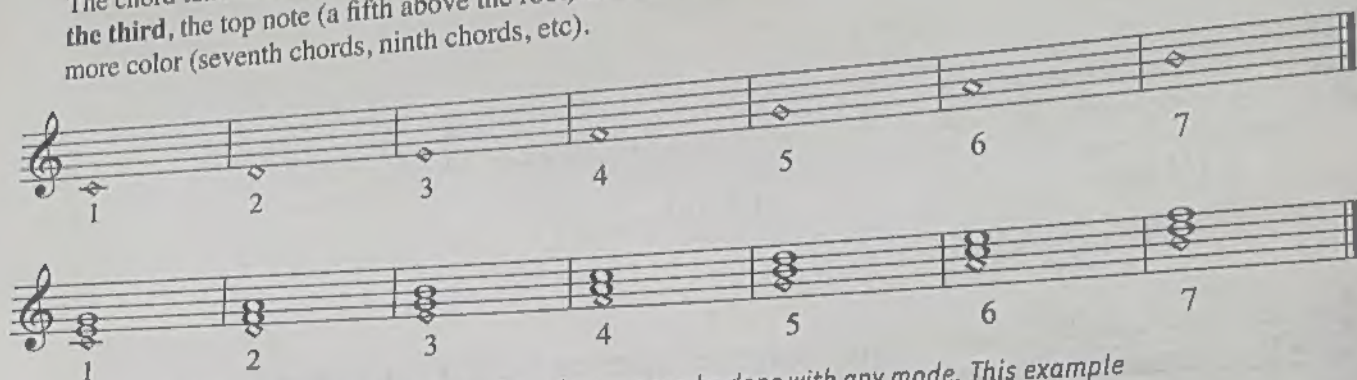


**Perfect Octave**



## Chords

By stacking **diatonic thirds** (thirds in the same key) on each scale tone, you can create three note chords called **triads**. Notice how the scale tones are numbered from 1 to 7. The chord tone on the bottom is the **root of the chord**, the middle note (a third above the root) is called **the third**, the top note (a fifth above the root) is called **the fifth**. You can continue to stack thirds for more color (seventh chords, ninth chords, etc).



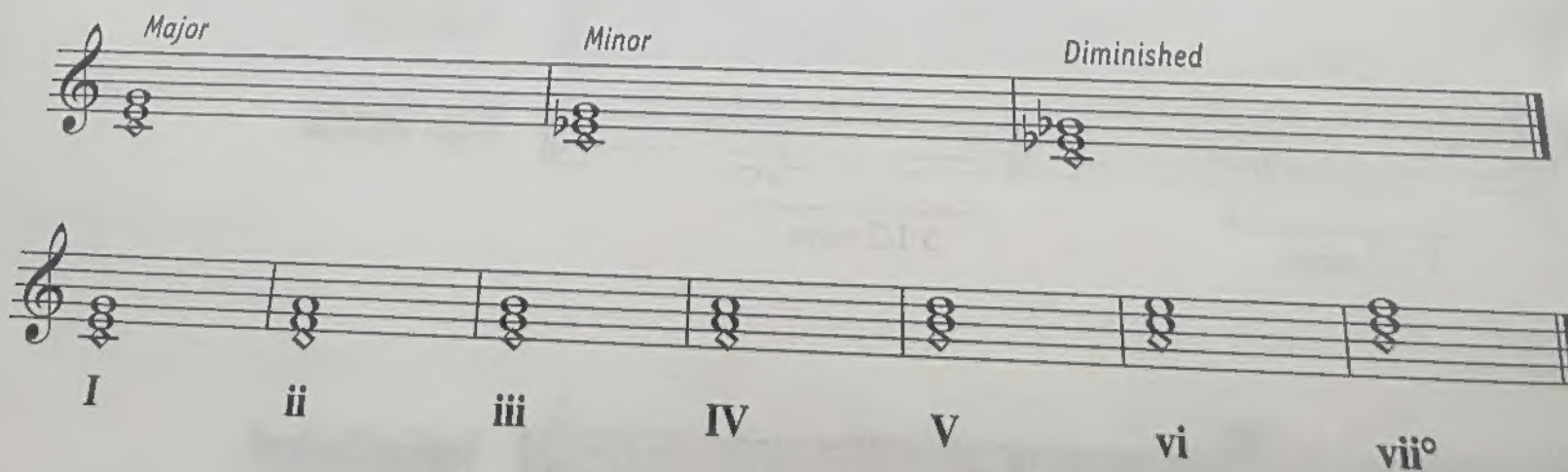
*Note: Building chords on diatonic scale tones can be done with any mode. This example shows the major scale (ionian mode).*

## Chord Qualities and Roman Numerals

Chords with a major third and perfect fifth are **major triads** (they get a large Roman numeral). For example, a major "one" chord, or a major "four" chord.

Chords with a minor third and perfect fifth are **minor triads** (they get a small Roman numeral). For example, a minor "two" chord or a minor "six" chord.

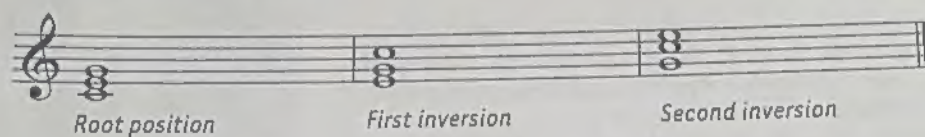
Chords with a minor third and a diminished fifth are **diminished triads** (they get a small Roman numeral with a circle). For example a diminished "seven" chord. There are many other chord qualities to be explored. A text dedicated to music theory can show you more options.





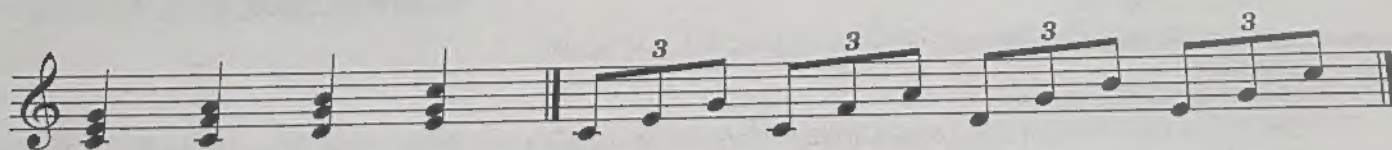
## Inversions

Any of these chords can be inverted. For example, “**root position**” refers to a chord with the root in the lowest position (voice) of the chord. A chord is in “**first inversion**” when the third is in the lowest position. A chord is in “**second inversion**” when the fifth is in the lowest position.



## Block Chords and Arpeggios

Chords can be performed “**block**” style, or they can be **arpeggiated**. In either case (as illustrated here), the harmonic function remains the same. Here (in both cases) we see a progression of: C, F (in 2<sup>nd</sup> inversion), G (in 2<sup>nd</sup> inversion), and C (in 1<sup>st</sup> inversion).



*Block chords:*

*All notes are struck simultaneously*

*Arpeggios:*

*Notes are performed in a “linear” fashion.*